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ABSTRACT

This journal highlights six papers by international authors on various topics in education. Written in French with a summary in English, the first article discusses the analysis of the regulatory effect and corrective value of three kinds of feedback (stereotype, specific, and feedback with self control) on preoperational subjects. The second article describes a research study designed to make an analysis of the cognitive abilities, vocational preferences, and educational aspirations on a sampling of 149 eighth grade students in Detroit. The third article, also in French with an English summary, describes a research project designed to test the validity of the scoring systems of several achievement tests for young children. The fourth article attempts to demonstrate that curriculum can develop only when it is shown as a dynamic rather than static concept. The fifth article reports on a study that determined whether gains in actual learning are bolstered by actual learning or are bolstered by stated performance objectives. The sixth article described a study which investigated the effect of a university course upon the attitudes of prospective French Canadian teachers towards immigrants. A chronicle of information concerning pedagogical research projects from various international organizations and educators is also presented. (JN)

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ESSAI D'ANALYSE DE L'EFFET RÉGULATEUR DE TROIS
TYPES DE FEEDBACK (FEEDBACK STÉRÉOTYPE, FEEDBACK
AVEC EXPLICATION ET FEEDBACK AVEC SOLLICITATION
D'UN AUTO-CONTRÔLE) SUR DES SUJETS
PRÉOPÉRATOIRES *

I. ANALYSE DE LA VALEUR CORRECTRICE DES TROIS FEEDBACKS

par

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Il est courant dans les milieux préoccupés d'éducation de souligner la valeur formative de l'erreur. La maxime populaire : « On apprend en se trompant » résume un point de vue qui se retrouve de quelque façon dans certaines thèses scientifiques. Selon la conception de l'apprentissage par essai et erreur, l'erreur ou plus justement l'effet négatif aurait pour conséquence l'élimination de réponses inadéquates. La fonction des échecs serait donc uniquement sélective.

Dans la théorie de Piaget, au contraire, les perturbations jouent un rôle plus dynamique puisque – selon l'école genevoise – une des fonctions de « l'expérience est de déconcerter, de mettre en déroute les schèmes antérieurement constitués. ... » (GRECO, 1969, p. 213) et par conséquent, de stimuler un „effort d'accommodation » (PIAGET, 1958, p. 65). La confrontation des schèmes assimilateurs du sujet et de la réalité susciterait la réorganisation de ces schèmes lorsque ceux-ci s'avèrent inadaptés. Ces propositions concordent presque parfaitement

* Nous tenons à remercier pour leur lecture critique et leurs conseils en cours de recherche : Madame BOTSON, Mesdemoiselles KAMII et THIRION, Messieurs BAYER et DE LANDSHEERE.

avec les thèses développées par certains néo-behavioristes. C'est du moins la thèse de BERLYNE lorsqu'il souligne : « Piaget's writings contain plenty of indication that it refers to a kind of learning motivated by conflict, particularly conceptual conflict and reinforced by conflict reduction » (BERLYNE, 1965, p. 274).

Toutefois, la rééquilibration des schèmes devrait intéresser davantage que leur déséquilibre. Si le conflit conceptuel est – pour l'éducateur – un phénomène intéressant à provoquer puisqu'il s'agit d'un moyen de « motiver » la recherche d'un meilleur équilibre par l'enfant, la résolution du conflit est un processus qu'il ne convient pas de négliger puisqu'il constitue le facteur véritable de progrès ou d'équilibration majorée (PIAGET, 1975, (b)). En définitive, nous croyons que les questions relatives au mécanisme de rééquilibration et de résolution de problème convergent, et que c'est à une meilleure connaissance de ces mécanismes que nous devons accéder.

Les essais d'apprentissage sans erreur des notions opératoires procèdent d'une approche fort différente, qui, sans démontrer l'inexistence des déséquilibres, en vérifie la nécessité (BOTSON, C. et DELIEGE, M., 1975, p. 22). Ces tentatives ont au moins la pertinence de s'attacher directement à la construction des conduites génératrices d'un meilleur équilibre. Pour ces chercheurs, provoquer un déséquilibre est sans aucun doute susceptible de susciter une tentative d'accommodation mais laisse le mécanisme inconnu (BOTSON, C. et DELIEGE, M., p. 213).

Il existe effectivement plusieurs voies de réduction du conflit (BERLYNE, D. E., 1966, p. 258), parmi lesquelles la « suppression » consiste à ignorer les sources de contradiction et, parfois même, à « refouler » les observables (PIAGET, 1975, (a)). Cette fuite s'accompagne parfois de manifestations plus ou moins intenses de stress ou de colère, qui résultent sans doute de l'accumulation d'essais infructueux (FURTH, H. G., 1975, p. 45). La répétition de telles situations et des réactions consécutives risque d'engendrer un évitement systématique des situations problématiques. Or, pour l'éducateur dont l'objectif premier réside dans la stimulation du développement (KOHLEBERG et MAYER, 1972), l'apprentissage de conduites pertinentes en face de l'échec est susceptible de se révéler une méthode féconde au terme du développement. Par conséquent, plutôt que de priver l'enfant de source de conflits, comme dans les essais d'apprentissage

sans erreur¹, il convient de découvrir des procédés susceptibles de faire porter directement l'action éducative sur le processus de résolution du conflit ou de réajustement des conduites inadaptées. Ces procédés seront étroitement dépendants du processus impliqué puisque la nature de ce processus varie elle-même avec le type de connaissance concerné.

Selon la théorie piagétienne, en effet, il existe au moins deux sortes de connaissances ou d'expériences « selon que l'expérience porte sur les choses elles-mêmes et permet de découvrir certaines de leurs propriétés ou suivant qu'elle porte sur des coordinations qui n'étaient pas dans les choses mais que l'action en utilisant ces dernières a introduites pour ses propres besoins (PIAGET, 1970, p. 41). Ces considérations épistémologiques sont de nature à guider les modes d'intervention didactique (KAMII, 1974, p. 40). Si la connaissance des règles culturelles doit nécessairement s'enseigner par transmission directe, la connaissance logico-mathématique devrait être l'aboutissement d'abstractions réfléchissantes que l'enseignant devrait encourager et stimuler. Par contre, dans la connaissance physique et spatiale ou infra-logique, « l'enseignant devrait encourager l'enfant à recevoir le feedback de l'objet lui-même » (KAMII, 1974, p. 40) et même éviter de donner un feedback ou une explication directe (ibidem).

En définitive, nos hypothèses sont les suivantes :

1. Le fait de souligner l'inadaptation ou l'inexactitude d'une conduite serait insuffisant en ce sens que cet événement constitue seulement l'élément générateur de conflit.
2. Ensuite, vient éventuellement le processus de réajustement ou de correction de cette réponse inadéquate dont une stratégie est – selon la formulation behavioriste (SKINNER, 1953, pp. 242-256 ; BERLYNE, 1966, p. 46 ; SKINNER, 1969, p. 145 et SKINNER, 1971, p. 192) – la construction ou la recherche de stimuli discriminatifs nouveaux. Afin de stimuler le mécanisme de réajustement des conduites relatives à la

1. Pour bien comprendre la position des spécialistes de l'apprentissage sans erreur, il convient de dissocier les questions de l'existence, de la nécessité et de l'utilité des déséquilibres. En effet, si RICHELLE pense que « le mécanisme des essais et erreurs (...) n'est nullement essentiel à l'apprentissage » (RICHELLE, 1966, p. 179), cet auteur hésite à en nier toute utilité développementale (ibidem).

connaissance infra-logique, il conviendrait d'enrourager la recherche d'autres indices. Selon nous, un des moyens d'induire cette recherche d'indices consisterait à solliciter de la part de l'enfant une évaluation¹ et une vérification de sa réponse.

3. Ce procédé serait aussi efficace que la formulation d'une explication spécifique consécutive à une évaluation négative de l'adulte.

DESCRIPTION DE L'EXPÉRIENCE

Dans le cadre d'activités concernant la connaissance spatiale, nous avons comparé les effets de trois types de feedback : le feedback stéréotypé, le feedback expliqué et le feedback avec sollicitation d'un auto-contrôle (feedback de contrôle ou probing).

Le feedback stéréotypé consiste à renseigner le sujet sur la seule exactitude de sa réponse (c'est juste – ce n'est pas juste). Le feedback expliqué consiste non seulement à informer l'enfant de la valeur de sa réponse, mais encore à décrire les caractères formels de la réponse qui justifient une évaluation négative. Le feedback de contrôle (BAYER, 1972) ou probing (ROENSHINE, 1973) désigne les réactions² verbales de l'enseignant qui visent à solliciter de l'enfant un éclaircissement, une justification, une preuve ou une vérification.

1. Afin de « motiver » la vérification, il nous a semblé nécessaire de ne pas informer au préalable le sujet de la valeur de sa réponse. Cette option implique un processus d'auto-évaluation que nous analyserons plus systématiquement dans un second article.

2. Le terme « réaction » est utilisé ici selon l'acception proposée par BELLACK (1966, p. 16) : « Pedagogically, these moves serve to modify (...) and or to rate (...) what was said in the moves that occasionned them ». Par opposition, nous distinguons la « sollicitation » qui consiste « ici à assigner une tâche à l'enfant. Le modèle des interactions verbales telles qu'elles se déroulèrent durant notre expérience, est le suivant :

Sollicitation de l'adulte → Réponse de l'enfant → Réaction de l'adulte

(→ nouvelle réponse de l'enfant

(→ fin

L'enfant produit une réponse après réaction :

① selon qu'il s'agit d'un feedback indirect ou direct

② selon que le feedback direct est positif ou négatif

Le feedback stéréotypé et le feedback expliqué constituent des feedbacks directs¹ (ZAHORIK, 1969). Le feedback de contrôle ou probing est, au contraire, un feedback indirect² (idem).

Le probing, tel que nous l'avons pratiqué, constitue une procédure dont on peut distinguer trois étapes :

1) Il est demandé à l'enfant d'estimer l'exactitude de sa réponse par une « question d'exactitude » (Q.E.).

A cette question, l'enfant peut répondre :

soit en confirmant sa réponse première,

soit en modifiant cette réponse,

soit en entamant une procédure de vérification ou de démonstration (l'enfant montre du doigt les correspondances entre éléments-modèle et éléments-réponse).

Le troisième type de comportement peut précéder une modification de la réponse initiale ou succéder à l'un ou l'autre des deux premiers types de réponse (confirmation ou modification de la réponse).

2) Si l'enfant ne vérifie ou ne démontre pas l'exactitude de sa réponse suite à la question d'exactitude, une invitation explicite à la vérification (I.E.V.) est formulée : « Comment saurait-on voir si c'est juste ? » « Montre-moi un peu si c'est juste ! ».

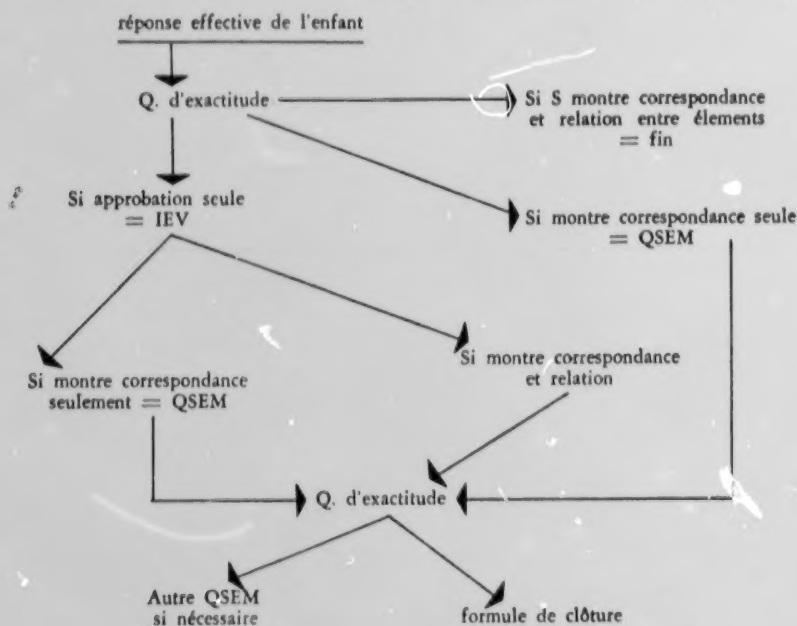
3) Si cette invitation pressante ne réussit pas à engendrer un processus de vérification, quelques questions précises tentent de l'amorcer : « Regarde chez moi, qu'est-ce que c'est à côté de x », « Devant x, qu'est-ce qu'il y a chez moi ? ... Et chez toi, montre un peu ! ... C'est la même chose ? » Ces questions spécifiques visant à induire l'Examen du Modèle (QSEM) sont – comme le feedback expliqué – particulières à chaque jeu. Elles n'ont été utilisées qu'en début d'expérimentation comme procédure d'incitation et de systématisation des comportements de vérification souhaités.

1. « Direct feedback refers to those oral remarks of teachers the main purpose of which is to convey information to the pupil regarding the value of his behavior » (ZAHORIK, 1969, p. 149)

2. Indirect feedback refers to those oral questions and statement that have a primary purpose other than providing feedback, but from which the child can infer the value of his behavior (idem, p. 149) par l'intermédiaire ici d'un comportement supplémentaire de vérification.

Une formule de clôture du cycle de communication consistait à proposer l'activité suivante : « On va faire un autre exercice, maintenant ! », ou toute autre formule du même type, (cfr. schéma).

Schéma résumant les interactions occurrentes dans le cadre du probing.



En résumé, une Q.E. (question d'exactitude) succède toujours à une réponse effective¹ de l'enfant. Pas contre, une IEV (invitation explicite à la vérification) ne survient que si l'enfant n'a pas entamé une procédure de vérification ou de démonstration de sa réponse. Les QSEM (questions spécifiques visant à induire l'examen du modèle) sont contingentes à l'absence de vérification après une IEV. Une Q.E. est à nouveau formulée lorsque la vérification a été réalisée par l'enfant. Le probing ainsi conçu apporte une aide graduelle en relation directe avec les caractéristiques de la réponse de l'enfant lors

1. Nous entendons par réponse effective le comportement de l'enfant dont le produit est l'objet de l'évaluation ou de la vérification.

des interactions précédentes. Le foyer de toutes les interventions verbales de l'animatrice restent évidemment la vérification de la réponse : aucun indice quant à l'exactitude ou à l'inexactitude de la réponse effective ne devait être fourni à l'enfant. Les conditions, la forme et le nombre des interventions verbales sont équivalentes selon qu'elles sont occasionnées par une réponse correcte ou erronée. La succession et les conditions d'émission des QE, IEV et QSEM sont, à cet effet, définies en fonction des comportements de vérification. Afin d'éviter que les QSEM portent exclusivement sur les éléments incorrects, l'animatrice en posait systématiquement pour toute relation d'élément et commençait toujours par la gauche.

Cinq séances furent aménagées. Deux types d'activités peuvent être distinguées :

- Type I : la consigne demande de copier un modèle
- Type II : la consigne spécifie un résultat qu'il faut atteindre, une construction à réaliser.

La première séance comprend un entraînement à la reproduction d'un ordre linéaire direct. La seconde séance est consacrée à la copie de mosaïques de couleurs et concerne les notions projectives devant-derrrière, à gauche - à droite. La troisième séance s'apparente à la réalisation d'une maquette de village : il s'agit de disposer sur une surface quadrillée des maisons miniatures et de respecter les coordonnées d'un modèle.

Deux autres séances, dont l'analyse fera l'objet d'un second article, succèdent directement à ces trois premières séances.

L'expérimentation eut toujours lieu dans la même salle. L'activité se déroulait autour d'une table, selon une programmation identique pour tous les sujets. Une animatrice, assise à la gauche de l'enfant dirigeait l'activité et octroyait les feedbacks. Un observateur était assis de l'autre côté de la table, en face de l'animatrice et notait les comportements de l'enfant. Les interactions verbales ont été enregistrées.

La programmation consiste en une gradation des activités dans le sens de la complexité. Toutefois, notre intention d'appréhender la valeur corrective des feedbacks nous contraignait à proposer une programmation « à pas » relativement larges de manière à occasionner un certain nombre d'erreurs. Néanmoins, des boucles de rattrapages permettent à tous les sujets de progresser dans la maîtrise des notions.

NIVEAU DÉVELOPPEMENTAL DES SUJETS

Trois groupes équivalents ont été constitués sur la base des différents critères suivants :

âge : les groupes présentent la même moyenne d'âge (48 mois) ; les

écarts-types des trois groupes ne diffèrent pas de manière significative ;

sexe : chaque groupe comprend deux garçons et deux filles ;

école : tous les enfants fréquentent la même école ;

institutrice et niveau pédagogique : tous les enfants sont issus de la même classe de l'école ;

niveau opératoire : (déterminé à l'aide d'épreuve de conservation de petits ensembles discrets d'éléments) tous les enfants sont non conserveurs et ont échoué à l'épreuve de reproduction d'un ordre linéaire direct.

Le petit nombre de sujets par groupe ($N = 4$) indique clairement qu'il s'agit d'une recherche exploratoire.

TABLEAU 1.

Réaction / groupe assigné	Sujets	Sexe des sujets	Age	Niveau de réussite à la reproduction d'un ordre	Conservation du nombre
Feedback stéréotype	Cat.	filles	42 mois	Stade I A	Correspondance terme à terme
	Jos.	garçon	48 mois	Stade O	Corresp. t à t
	Mic.	garçon	53 mois	Stade O	Corresp. t à t
	Nad.	filles	49 mois	Stade O	Corresp. t à t
Feedback expliqué	Gio.	garçon	45 mois	Stade O	Corresp. t à t
	Mar.	filles	46 mois	Stade I A	Corresp. t à t
	Pat.	garçon	52 mois	Stade I A	Corresp. globale
	Vér.	filles	48 mois	Stade O	Corresp. t à t
Feedback de contrôle	Jea.	garçon	48 mois	Stade I A	Corresp. t à t
	Lau.	filles	48 mois	Stade I A	Corresp. t à t
	Rap.	garçon	53 mois	Stade O	Corresp. t à t
	Sen.	filles	42 mois	Stade O	Corresp. t à t

ANALYSE DE LA VALEUR CORRECTRICE DES TROIS FEEDBACKS

Le feedback est « une information régulatrice » (BAYER, 1972) dont il est particulièrement aisé d'évaluer l'efficacité lorsque l'enfant s'est trompé. La valeur du feedback consécutif à une réponse erronée se manifeste dans la qualité du changement engendré¹.

Les erreurs négligées

Le feedback de contrôle invite l'enfant à la vérification et, par ce biais, suscite parfois la correction des erreurs que l'enfant découvre. Il était, toutefois, concevable que les enfants ne découvrent pas toutes les erreurs. Il est, par conséquent, important de connaître la proportion d'erreurs négligées afin d'appréhender l'efficacité corrective du probing.

Les feedbacks directs n'engendrent pas toujours un essai de correction. Les enfants sont parfois restés inopérants suite à une réaction verbale de l'adulte signalant l'inexactitude de la réponse initiale (émise après sollicitation). Dans ces cas, l'erreur était en quelque sorte négligée.

Dans un premier temps, il était important de déterminer si les feedbacks de contrôle induisent davantage d'erreurs négligées que les feedbacks directs.

Le tableau 2 mentionne le nombre de réponses erronées émises après sollicitation (N), le nombre d'erreurs négligées (e n) et le nombre d'erreurs qui ont fait l'objet d'une tentative de correction (t c).

Le problème consiste donc à savoir si la répartition des conduites consécutives à un feedback en erreurs négligées et tentatives de correction est équivalente dans les trois groupes. Nous avons testé cette hypothèse à l'aide du chi-carré.

1ère séance : $X^2 = 6.89$ N.S. pour d. l. 2

2e séance : $X^2 = 5.4$ N.S. pour d. l. 2

3e séance : $X^2 = 3.55$ N.S. pour d. l. 2

Il apparaît à travers ces données que le probing ne suscite pas une négligence plus abondante que les feedbacks directs.

1. Pour les analyses de cette première partie, nous ne considérons que les trois premières séances.

TABLEAU 2.

Types de réaction	Catégories Sujets	Ière séance			Ile séance			Ilie séance		
		en	tc	N	en	tc	N	en	tc	N
Feedback stéréotypé	Cat	-	-	-	0	1	1	3	2	5
	Jos	0	4	4	1	4	5	4	15	19
	Mic	3	16	19	3	6	9	7	18	25
	Nad	8	9	17	1	4	5	1	34	35
	Global	11	29	40	5	15	20	15	64	84
Feedback expliqué	Gio	10	12	22	5	8	13	2	21	23
	Mar	1	1	2	0	8	8	1	3	4
	Pat	0	4	4	2	6	8	0	8	8
	Vér	1	4	5	3	5	8	3	5	8
	Global	12	21	33	10	27	37	6	37	43
Feedback de contrôle	Jea	0	0	0	0	3	3	0	2	2
	Lou	0	1	1	0	6	6	2	3	5
	Rap	1	5	6	0	3	3	0	6	6
	Sen	0	9	9	0	4	4	0	9	9
	Global	1	15	16	0	16	16	2	20	22

Analyse différentielle de l'impact correctif des trois types de feedback

Lorsque le feedback génère une modification de la réponse initiale, la nouvelle réponse peut constituer un progrès par rapport à la réponse précédente, ou, au contraire, « une régression », ou a encore un « statu quo » en ce sens qu'elle est « plus fausse » ou « également fausse » par rapport à la réponse qui a justifié le feedback « négatif ». Pour des raisons liées au traitement statistique, ces deux dernières catégories (régression et statu quo) ont été réunies sous la dénomination « pas de progrès ».

Le tableau 2. indique pour chaque sujet des trois groupes (a) le nombre de réponses après feedback ne constituant pas un progrès,

(b) le nombre de réponses constituant un progrès, (c) le nombre total de réponses émises après feedback au cours des trois séances.

TABLEAU 3.

Types de réaction	Catégories Sujets	Ordre			Mosaïques de couleurs			Construction de villages		
		a	b	c	a	b	c	a	b	c
Feedback stéréotypé	Cat	-	-	-	0	1	1	2	4	6
	Jos	5	4	9	7	5	5	42	16	58
	Mic	24	26	50	9	10	19	25	13	38
	Nad	14	11	25	11	5	16	56	30	86
	Global	43	41	84	27	21	48	125	63	188
Feedback expliqué	Gio	20	25	45	9	14	23	25	21	46
	Mar	0	1	1	4	13	17	2	3	5
	Par	3	4	7	5	12	17	6	8	14
	Vér	2	6	8	2	6	8	7	5	12
	Global	25	36	61	20	45	65	40	37	77
Feedback de contrôle	Jea	0	0	0	1	5	6	0	2	2
	Lau	0	2	2	0	16	16	0	3	3
	Rap	0	11	11	1	7	8	0	6	6
	Sen	1	26	27	0	9	9	1	9	10
	Global	1	39	40	2	37	39	1	20	21

N.B. : Le nombre de réponses émises après réaction (c) varie non seulement en fonction du nombre d'erreurs commises après sollicitation, mais encore avec la qualité des corrections apportées après « réaction ».

Afin de préciser le degré de signification des différences entre les trois groupes, un chi-carré a été calculé sur les fréquences obtenues par les trois groupes à chaque séance. Il s'agit ici de contrôler l'homogénéité des trois échantillons de réponses.

Ensuite, afin de déterminer dans quelle mesure la répartition des fréquences dans les diverses catégories distinguées est aléatoire, nous avons appliqué le test du chi-carré à chaque échantillon séparément (cfr. tableau 4).

TABLEAU 4.

	1ère séance	2 ^e séance	3 ^e séance
Test d'homogénéité des échantillons	$X^2 = 28$ S à P.001 pour d. l. 2	$X^2 = 25.85$ S à P.001 pour d. l. 2	$X^2 = 29.14$ S à P.001 pour d. l. 2
Feedback stéréotypé	$X^2 = .047$ NS pour d. l. 1	$X^2 = .76$ NS pour d. l. 1	$X^2 = 10.22$ S à P.01 pour d. l. 1
Feedback expliqué	$X^2 = 1.98$ NS pour d. l. 1	$X^2 = 9.61$ S à P.01 pour d. l. 1	$X^2 = .012$ NS pour d. l. 1
Feedback de contrôle	$X^2 = 36.1$ S à P.001 pour d. l. 1	$X^2 = 31.41$ S à P.01 pour d. l. 1	$X^2 = 17.18$ S à P.001 pour d. l. 1

Au feedback stéréotypé succèdent autant d'améliorations de la réponse préalable que de réponses ne constituant pas un progrès. Cette conclusion ne vaut que pour les reproductions d'un ordre linéaire direct et les mosaïques de couleurs. Dans le cadre des constructions de villages, les feedbacks stéréotypés négatifs ne sont suivis qu'une fois sur trois d'améliorations de l'erreur.

Le feedback expliqué engendre davantage de progrès que le feedback stéréotypé. Si, à l'occasion de la première séance, les feedbacks expliqué et stéréotypé apparaissent équivalents (autant de « progrès » que de « non-progrès »), il n'en est plus ainsi à l'occasion des autres activités. Dans le cadre des mosaïques de couleurs, le feedback expliqué est suivi six fois sur dix de « progrès ». À l'occasion des constructions de villages, la proportion de « progrès » par rapport au nombre total de réponses émises après feedback est 0.48 et semble signifier une efficacité moindre du feedback expliqué. Toutefois, du seul point de vue comparatif, la différence constatée entre feedback stéréotypé et feedback expliqué à l'occasion de la deuxième séance se maintient : l'impact correctif du feedback expliqué est supérieur à celui du feedback stéréotypé.

L'impact correctif du feedback de contrôle est maximal puisque le nombre de « non-progrès » au cours des trois séances est réellement minime ($N = 4$). D'autre part, l'efficacité de ce type de réaction ne se modifie pas au cours des trois séances analysées.

L'efficacité du feedback de contrôle peut paraître paradoxale puisque le probing n'informe pas de l'exactitude ou de l'inexactitude de la réponse, ni ne décrit les caractères formels de la bonne réponse absents de la réponse produite par l'enfant. Il convient de chercher une explication à ce phénomène. Le paragraphe suivant est susceptible d'en proposer une.

ANALYSE DES COMPORTEMENTS DE PRÉPARATION

Lorsque l'enfant est amené à corriger une de ses réponses, il peut fournir une nouvelle réponse engendrée par une sorte d'acte aléatoire. Il peut, au contraire, présenter des comportements observables d'analyse de la situation ou de recherche d'indices pertinents c.à.d. propres à le guider dans la résolution du problème. Ces « comportements précurseurs » ou « comportement de préparation » sont liés au problème posé. Pour les jeux consistant à copier un modèle, nous avons noté simplement si le sujet regardait ou non le modèle avant de corriger une erreur. Il s'agit là assurément d'un comportement préalable indispensable à la copie correcte d'un modèle. Cette relation logiquement vraisemblable, nous tâcherons de la vérifier empiriquement.

Dans le tableau qui suit, nous considérons pour chaque groupe : le nombre des réponses émises après feedback sans examen du modèle (pas examen), le nombre des réponses émises après feedback avec examen du modèle (examen) et le nombre total de réponses émises après feedback.

Pour chaque séance, le chi-carré a été appliqué aux trois échantillons afin de déterminer l'existence éventuelle de différences entre les trois groupes en ce qui concerne la répartition des réponses dans les deux catégories distinguées (test d'homogénéité).

Ensuite, le chi-carré a été appliqué à chaque échantillon séparément afin de tester le caractère aléatoire de la répartition des fréquences au sein des trois groupes, à l'occasion des diverses séances.

TABLEAU 5.

Types de réaction	Catégories Sujets	Ordre			Mosaïques de couleurs			Construction de villages		
		PE	E	N	PE	E	N	PE	E	N
Feedback stéréotypé	Cat	-	-	-	0	1	1	2	4	6
	Jos	4	5	9	6	6	12	52	6	58
	Mic	33	17	50	9	10	19	22	16	38
	Nad	22	3	25	11	5	16	47	39	86
	Global	59	25	84	26	22	48	123	65	188
Feedback expliqué	Gio	25	20	45	13	10	23	32	14	46
	Mar	0	1	1	10	7	17	1	4	5
	Pat	4	3	7	8	9	17	10	4	14
	Vér	3	5	8	0	8	8	5	7	12
	Global	32	29	61	31	34	65	48	29	77
Feedback de contrôle	Jea	0	0	0	0	6	6	0	2	2
	Lau	0	2	2	0	16	16	0	3	3
	Rap	2	9	11	1	7	8	0	6	6
	Sen	0	27	27	0	9	9	0	10	10
	Global	2	38	40	1	38	39	0	21	21

TABLEAU 6.

	1ère séance	2e séance	3e séance
Test d'homogénéité des 3 échantillons	$X_2 = 46.37$ S à P.001 pour d. l. 2	$X_3 = 28.41$ S à P.001 pour d. l. 2	$X_3 = 30.87$ S à P.001 pour d. l. 2
Feedback stéréotypé	$X_2 = 11.2$ S à P.001 pour d. l. 1	$X_2 = 0.33$ NS pour d. l. 1	$X_2 = 0.36$ NS pour d. l. 1
Feedback expliqué	$X_2 = 0.15$ NS pour d. l. 1	$X_2 = 0.14$ NS pour d. l. 1	$X_2 = 4.69$ NS pour d. l. 1
Feedback de contrôle	$X_1 = 32.4$ S à P.001 pour d. l. 1	$X_2 = 35.10$ S à P.001 pour d. l. 1	$X_2 = 21$ S à P.001 pour d. l. 1

Dans le groupe « feedback de contrôle », les données sont uniformes pour tous les sujets aux trois séances : les enfants regardent le modèle avant de modifier après réaction de l'adulte leur réponse initiale.

Après un feedback expliqué négatif, les sujets observés n'appliquent pas une stratégie spécifique : les feedbacks expliqués négatifs sont suivis aussi souvent de réponses sans examen du modèle que de réponses avec examen du modèle¹.

Dans le groupe feedback stéréotypé, les données varient selon les épreuves. Deux cas ont été constatés :

- le nombre de réponses émises sans examen du modèle est supérieur au nombre de réponses émises avec examen du modèle (première séance) ;
- la répartition est aléatoire, c.à.d. que le nombre de réponses émises sans examen du modèle est égal au nombre de réponses émises avec examen du modèle (deuxième et troisième séance).

Si nous combinons les données des trois séances, il apparaît que tous les sujets du groupe feedback stéréotypé ont émis plus de réponses consécutives à une réaction sans examen du modèle qu'avec examen du modèle. Seule Cat. fait exception.

Des différences minimales semblent distinguer les deux feedbacks directs quant à leur influence sur les comportements précurrents. Toutefois, si nous considérons les données après combinaison des trois séries de totaux propres à ces feedbacks, il apparaît que les sujets soumis au feedback expliqué ont émis proportionnellement plus de regards vers le modèle (.45) que les sujets du groupe feedback stéréotypé².

EXAMEN DU MODÈLE ET AMÉLIORATION DE LA RÉPONSE LORS DE MODIFICATIONS APPORTÉES APRÈS FEEDBACK

L'analyse subséquente consiste à vérifier si l'examen du modèle constitue effectivement l'acte par lequel le sujet cherche les stimuli

1. Dans le cadre de ce bref compte rendu, il est impossible d'analyser les différences individuelles. Notons, toutefois, que Vér. produit davantage de réponses avec examen de modèles que les autres enfants du même groupe.

2. Pendant la formulation de l'explication, lorsque les enfants ne regardent pas le modèle, ils regardent soit l'animatrice, soit la réponse fausse, soit ailleurs (la fenêtre, par exemple).

pertinents ou les dimensions du modèle qui doivent être respectées par sa réponse. Le regard vers le modèle serait une condition d'autant plus nécessaire à la production de la réponse correcte que l'enfant ne disposerait pas d'autres moyens d'obtenir l'information requise pour la résolution du problème. Or, le feedback expliqué, qui décrit les caractères formels de la bonne réponse absents de la réponse enfantine fournit un indice de nature verbale susceptible d'aider l'enfant à produire la réponse correcte sans examen du modèle. Par conséquent, l'examen du modèle devrait s'avérer plus nécessaire dans le cadre des groupes feedback stéréotypé et probing que dans le cadre du groupe feedback expliqué.

Notre problème consiste, en définitive, à déterminer s'il existe une corrélation entre l'examen précurrent du modèle et la production d'une réponse constituant un progrès et inversement entre l'absence d'examen du modèle et la production d'une réponse ne constituant pas un progrès. Afin d'évaluer la relation entre ces deux dichotomies, nous avons utilisé le coefficient Phi (HAYS, 1970, p. 606).

TABLEAU 7.
Feedback Stéréotype.

Ordre

	Jos			Mic			Nad			Total		
	0	1	Tot	0	1	Tot	0	1	Tot	0	1	Tot
pas examen	4	0	4	22	11	33	14	8	22	40	19	59
avec examen	1	4	5	2	15	17	0	3	3	3	22	25
TOTAL	5	4	9	24	26	50	14	11	25	43	41	84

Mosaïques de couleurs

	Gat			Jos			Mic			Nad			Total		
	0	1	Tot	0	1	Tot	0	1	Tot	0	1	Tot	0	1	Tot
pas examen	0	0	0	6	0	6	9	0	9	11	0	11	26	0	26
avec examen	0	1	1	1	5	6	0	10	10	0	5	5	1	21	22
TOTAL	0	1	1	7	5	12	9	10	19	11	5	16	27	21	48

Constructions de Villages

	Cat			Jos			Mic			Nad			Total		
	0	1	Tot	0	1	Tot	0	1	Tot	0	1	Tot	0	1	Tot
pas examen	2	0	2	42	10	52	22	0	22	45	2	47	105	12	117
avec examen	0	4	4	0	6	6	3	13	16	11	28	39	20	51	71
TOTAL	2	4	6	42	16	58	25	13	38	56	30	86	125	63	188

TABLEAU 8.

*Feedback expliqué.**Ordre*

	Gio			Mar			Pat			Vér			Global		
	0	1	Tot	0	1	Tot	0	1	Tot	0	1	Tot	0	1	Tot
pas examen	11	14	25	0	0	0	3	1	4	2	1	3	16	16	32
avec examen	9	11	20	0	1	1	0	3	3	0	5	5	9	20	29
TOTAL	20	25	45	0	1	1	3	4	7	2	6	8	25	36	61

Mosaïques de couleurs

	Gio			Mar			Pat			Vér			Global		
	0	1	Tot	0	1	Tot	0	1	Tot	0	1	Tot	0	1	Tot
pas examen	7	6	13	4	6	10	2	6	8	0	0	0	13	18	31
avec examen	2	8	10	0	7	7	3	9	12	2	6	8	7	27	34
TOTAL	9	14	23	4	13	17	5	15	20	2	6	8	20	45	65

Constructions de Villages

	Gio			Mar			Pat			Vér			Global		
	0	1	Tot	0	1	Tot	0	1	Tot	0	1	Tot	0	1	Tot
pas examen	21	11	32	1	0	1	5	5	10	3	2	5	30	18	48
avec examen	4	10	14	1	3	4	1	3	4	4	3	7	10	19	29
TOTAL	25	21	46	2	3	5	6	8	14	7	5	12	40	37	77

TABLEAU 9.

*Probing.**Ordre*

	Jea			Lau			Rap			Sen			Global		
	0	1	Tot	0	1	Tot	0	1	Tot	0	1	Tot	0	1	Tot
pas examen	0	0	0	0	0	0	0	2	2	0	0	0	0	2	2
avec examen	0	0	0	0	2	2	0	9	9	1	26	27	1	37	38
TOTAL	0	0	0	0	2	2	0	11	11	1	26	27	1	39	40

Mosaïques de couleurs

	Jea			Lau			Rap			Sen			Global		
	0	1	Tot	0	1	Tot	0	1	Tot	0	1	Tot	0	1	Tot
pas examen	0	0	0	0	0	0	1	0	1	0	0	0	1	0	1
avec examen	1	5	6	0	16	16	0	7	7	0	9	9	1	37	38
TOTAL	1	5	6	0	16	16	1	7	8	0	9	9	2	37	39

Constructions de Villages

	Jea			Lau			Rap			Sen			Global		
	0	1	Tot	0	1	Tot	0	1	Tot	0	1	Tot	0	1	Tot
pas examen	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
avec examen	0	2	2	0	3	3	0	6	6	1	9	10	1	20	21
TOTAL	0	2	2	0	3	3	0	6	6	1	9	10	1	20	21

Rappelons que « la valeur significative de ϕ est tout simplement celle du X^2 correspondant en vertu de la relation $X^2 = N\phi^2$ (HAYS, 1970), p. 604).

Les valeurs respectives du coefficient Phi et du chi-carré correspondant sont réunis dans le tableau n° 10.

TABLEAU 10.

Type de feedback	Sujets	1ère séance		2e séance		3e séance	
		ϕ	X_2	ϕ	X_2	ϕ	X_2
Feedback stéréotypé	Cat.	/	/	/(1)	/	1	6 S à P.01
	Jos.	0.8	5.75 S à P.01	0.84	8.45 S à P.01	0.55	17.54 S à P.001
	Mic.	0.52	13.52 S à P.001	1	19 S à P.001	0.84	26.81 S à P.001
	Nad.	0.42	4.32 NS (2)	1	16 S à P.001	0.71	43.35 S à P.001
	Tot.	0.518	21.84 S à P.001	0.96	44.54 S à P.01	0.63	74.61 S à P.001
Feedback expliqué	Gio.	0.01	0.0045 NS	0.34	2.65 NS	0.34	5.32 NS
	Mar.	/(1)	/	0.46	3.60 NS	0.61	1.86 NS
	Pat.	0.75	3.94 NS	0.09	0.14 NS	0.21	0.68 NS
	Vér.	0.75	4.50 NS	/(1)	/	0.03	0.01 NS
	Tot.	0.19	2.24 NS	0.23	3.46 NS	0.23	0.56 NS

(1) Le coefficient phi ne peut être calculé.

(2) Rappelons que nous avons fixé le seuil de signification à P.01.

Dans le groupe probing, seule une case des tables de contingence est remplie : celle située à l'entrecroisement des catégories réponses correctes et réponses avec examen du modèle. Les autres cases sont presque toujours vides. Dans de telles conditions, le coefficient phi ne peut être calculé puisque le numérateur au moins est presque toujours égal à zéro¹.

1. Deux coefficients phi peuvent être calculés. Il concerne les mosaïques de couleurs :

Rap. : = 1.00

Tot. : = 0.698

X_2 = 8 S à P.01

X_2 = 19 S à P.001

COMMENTAIRES DE SYNTHÈSE

(1) une forte corrélation entre l'examen du modèle et l'exactitude de la réponse ainsi qu'entre l'absence d'examen du modèle et l'inexactitude de la réponse (ϕ est toujours positif puisque $ad > bc$) apparaît dans le groupe feedback stéréotypé.

(2) le calcul du coefficient-Phi est impossible dans le groupe probing. Néanmoins, l'affirmation selon laquelle l'examen du modèle constitue une condition nécessaire à la production de la réponse correcte après réaction dans le cadre de la procédure probing, n'est pas démentie car, lorsque nous considérons que le probing produit un maximum de corrections appropriées et engendre un maximum d'examen du modèle après réaction, la relation entre examen du modèle et réponse correcte ne semble être dissimulée que par la très grande efficacité du probing à produire l'un et l'autre.

(3) aucune corrélation n'apparaît dans le groupe feedback expliqué. Toutefois, si nous combinons les données de tous les sujets aux trois séances, nous obtenons la table de contingence suivante.

TABLEAU 11.

	0	1	Tot
sans examen	59	52	111
avec examen	26	66	92
TOTAL	85	118	203

pour laquelle $\phi = 0.291$ $X^2 = 12.58$ $S. à P.001$

A ce niveau de regroupement des données, la corrélation est donc significative.

D'autre part, nous pouvons déduire de cette table de contingence les stratégies des sujets du feedback expliquée et l'efficacité associée à ces stratégies.

Deux types d'indices peuvent être utilisés par les sujets qui reçoivent des feedbacks expliqués : l'un verbal, l'autre d'origine perceptive (examen du modèle). A partir de l'observation des regards, nous

déterminons les réponses données sur la base de l'indice verbal seul. Nous avons relevé 111 réponses données sans examen du modèle, que nous supposons¹ guidées par l'explication verbale. Sur ces 111 réponses, 52 sont correctes et 59 incorrectes. Par contre, lorsque l'enfant utilise les deux types d'indices ou, au moins, les « indices perceptifs » son efficacité s'accroît puisque 66 réponses sur 92 sont correctes et 26 incorrectes.

Si nous comparons à l'aide du chi-carré, la distribution des réponses données avec examen du modèle et celle des réponses données sans examen du modèle.

$$\chi^2 = 11.95$$

$$S \text{ à } P.001$$

Cet ensemble de données nous paraît de nature à expliquer l'efficacité relative des trois types de réactions :

- Le probing en invitant l'enfant à vérifier sa réponse après sollicitation l'incite à analyser le modèle et à ne produire de corrections que sur la base d'indices issus du modèle. En sollicitant la vérification, le probing suscite les comportements précurseurs adéquats à la production de la réponse correcte.
- Le feedback stéréotypé, à l'inverse, engendre peu de comportements précurseurs et peu de corrections appropriées.
- Le feedback expliqué produit davantage de comportements précurseurs. Lorsque ceux-ci sont émis par les sujets, la proportion de corrections adéquates est de .72. Au contraire, lorsque les sujets n'émettent pas ces comportements précurseurs, la proportion de corrections judicieuses est de .47.

MODE DE RÉACTION ET NOMBRE D'ERREURS APRÈS SOLLICITATION

La formulation d'un feedback à la suite d'une réponse erronée ne vise pas seulement à constituer une amorce efficace pour l'émission de la réponse correcte, mais aussi à augmenter la probabilité d'apparition de réponses correctes directement consécutives aux sollicitations.

1. Il est possible que l'enfant n'agisse pas dans ces cas sous le contrôle de l'explication verbale. Toutefois, nous ne le pensons pas, car ces 111 réponses concernent souvent l'élément désigné par l'explication. La difficulté consisterait pour l'enfant à placer l'élément à l'endroit renseigné par l'animatrice.

TABLEAU 12.

Types de réactions	Sujets	Ordre			Mosaïques de couleurs			Constructions de villages		
		1	O	N	1	O	N	1	O	N
Feedback stéréotypé	Cat	—	—	—	10	1	11	36	5	41
	Jos	5	4	9	8	5	13	33	19	52
	Mi	5	19	24	4	9	13	32	25	57
	Nad	17	17	34	6	5	11	28	35	63
	Global	27	40	67	28	20	48	129	84	213
Feedback expliqué	Gio	6	22	28	2	13	15	30	23	53
	Mar	5	2	7	3	8	11	37	4	41
	Pat	5	4	9	7	8	15	37	8	47
	Vér	5	5	10	7	8	15	33	8	41
	Global	21	33	54	19	37	56	139	43	182
Probing	Jes	4	0	4	8	3	11	39	22	41
	Lra	5	1	6	5	6	11	42	5	47
	Eap	5	6	11	8	5	11	35	6	41
	Sen	5	9	14	7	5	11	32	9	41
	Global	19	16	35	28	16	44	148	22	170

1 = nombre de réponses correctes émises après Sollicitation.

O2 = nombre de réponses erronées émises après Sollicitation.

N3 = nombre total de réponses émises après Sollicitation.

TABLEAU 13.

	1ère séance	2e séance	3e séance
Test d'homogénéité des 3 échantillons	$X^2 = 2.41$ N.S. pour d. l. 2	$X^2 = 10.43$ S à P.01 pour d. l. 2	$X^2 = 35.69$ S à P.001 pour d. l. 2
Feedback stéréotypé	$X^2 = 2.52$ N.S. pour d. l. 1	$X^2 = 1.33$ N.S. pour d. l. 1	$X^2 = 9.5$ S à P.01 pour d. l. 1
Feedback expliqué	$X^2 = 2.66$ N.S. pour d. l. 1	$X^2 = 3.78$ N.S. pour d. l. 1	$X^2 = 30.64$ S à P.001 pour d. l. 1
Feedback de contrôle	$X^2 = 0.26$ N.S. pour d. l. 1	$X^2 = 3.27$ N.S. pour d. l. 1	$X^2 = 93.39$ S à P.001 pour d. l. 1

Nous proposons simplement de comparer le nombre de réponses correctes et erronées produites après sollicitation à l'intérieur de chaque groupe. Si nous faisons l'hypothèse que nos groupes sont équivalents (ce que nous avons tâché de réaliser au moment de leur constitution), les proportions des réponses erronées et celle des réponses correctes devraient être équivalentes dans tous les groupes à moins qu'une variable intervienne pour diminuer ou augmenter la quantité des réponses erronées et, partant, modifier celle des réponses correctes. La variable génératrice de différences entre les groupes résiderait dans le mode de réaction, puisque toutes les autres variables sont analogues dans les trois groupes.

Cette hypothèse de l'influence d'un feedback octroyé à l'occasion d'un item x sur les réponses aux autres items est d'autant plus justifiée que toutes les activités concernées impliquent des notions spatiales. Au sein d'une même série d'activités, les notions spatiales impliquées sont pratiquement toutes de même niveau (ordre = voisinages, partie (b) = avant-arrière et gauche droite ; mosaïques = voisinages, avant-arrière et gauche droite ; + quelques éléments métriques ; constructions de villages = comme mosaïques).

Nous considérons chaque jeu successivement et tâchons de déterminer si la répartition des réponses après sollicitation en réponses correctes et erronées diffère selon la « réaction » considérée. A cette fin, nous utilisons à nouveau le chi-carré (tableau 13).

Au niveau de la première séance, l'hypothèse nulle ne peut être rejetée aucune fois. Nous concluons donc à l'homogénéité des trois échantillons et soulignons le caractère aléatoire des distributions des trois échantillons. Par contre, au niveau de la seconde séance, nous ne pouvons plus conclure à l'homogénéité des trois échantillons. Toutefois, les chi-carrés appliqués à chaque échantillon pris séparément ne permettent pas de rejeter l'hypothèse nulle : les distributions seraient encore aléatoires. L'hétérogénéité des échantillons proviendrait de la tendance antagoniste constatée dans le groupe feedback expliqué (davantage de réponses erronées que de réponses correctes) par rapport aux deux autres groupes. Enfin, au niveau de la troisième séance, les trois échantillons sont hétérogènes. D'autre part, les distributions se différencient toutes d'une distribution aléatoire, puisque les trois chi-carrés appliqués aux échantillons séparés sont significatifs.

Seul le degré de signification varie. Nous concluons à une signification de tendance, mais à une diversité dans l'importance de cette tendance.

Au départ, c'est-à-dire à l'occasion des reproductions d'un ordre linéaire direct, les trois échantillons de réponses produites après sollicitation ne se différencient pas. Par contre, dès la seconde séance (mosaïques de couleurs), une différence significative est enregistrée. A l'occasion de la troisième séance, une différence plus accentuée est à nouveau constatée. Cet ensemble de données suggèrent une évolution temporelle de l'efficacité relative des trois réactions.

En conclusion, l'hypothèse d'un effet différentiel du type de réaction sur la qualité de la réponse produite après sollicitation ne peut être rejetée. La pratique du feedback de contrôle semblerait réduire « le risque d'erreur » lors de l'émission d'une réponse après sollicitation. Cet effet est, sans doute lié à la qualité et à l'intensité de l'activité perceptive¹ précurseur à l'émission de la réponse effective dont le feedback de contrôle serait inducteur.

CONCLUSIONS

1. A travers les données recueillies dans cette expérience, la valeur régulatrice du feedback stéréotypé négatif se révèle minimale. Informer un sujet préopératoire de l'inexactitude de sa réponse ne constitue pas une « réaction » verbale suffisante pour provoquer l'ajustement des réponses erronées. Cette réaction n'induit qu'épisodiquement une nouvelle lecture du modèle susceptible de guider l'enfant dans la correction de sa réponse. Bien plus, une analyse qualitative des tenta-

1. Rappelons que par « activités perceptives », Piaget désigne les processus intervenant au sein des perceptions dans la mesure où il s'agit de relier les concentrations ou leurs produits à des distances dans l'espace ou dans le temps excluant une interaction immédiate (...). Elles ont normalement pour résultat de favoriser les coordinations. (PIAGET, 1975, (c), p. 172). « L'exploration est sans doute la plus simple et la plus générale des activités perceptives » (idem, p. 175). Il est clair que tous les phénomènes regroupés sous cet intitulé constituent des activités au sens strict. Comme telle, l'activité exploratrice est susceptible de grandes variations avec l'âge, du point de vue de son caractère plus ou moins systématique (...), de son caractère plus ou moins automatique ou actif et même de sa durée moyennée d'activation pour une figure considérée ». (idem, p. 176).

tives d'ajustement de ces sujets¹ laisse apparaître le caractère presque magique de certaines conduites (toucher, soulever un élément puis le remettre à la même position, ajuster l'alignement des éléments, ...).

2. Dans l'explication de l'inefficacité du feedback expliqué, nous ne pouvons ignorer l'hypothèse d'un développement insuffisant de la fonction régulatrice du langage. Il est possible, en outre, que la structure linguistique des feedbacks expliqués soit trop complexe et empêche la bonne compréhension des informations fournies par l'adulte. Néanmoins, nous croyons que la focalisation exclusive de ce type de feedback sur la réponse terminale et sa négligence des conduites d'exploration déterminent fortement le maintien de réponses erronées.

3. Le feedback de contrôle ou probing apparaît comme la réaction verbale la plus efficace. L'analyse des comportements précurseurs offre – selon nous – une explication du mode d'action de ce feedback que nous pouvons résumer comme suit :

a. A un premier niveau, le feedback de contrôle correspond (par l'intermédiaire des Invitations Explicites à la Vérification et des Questions Spécifiques visant à induire l'Examen du Modèle) à une incitation verbale des conduites de vérification de la réponse effective.

b. Par ce biais, l'enfant a la possibilité de découvrir ses erreurs (c'est à dire les « discordances » entre sa réponse et le modèle) et de les corriger dans la mesure où il a été amené par l'animatrice à une nouvelle exploration de la configuration modèle. Cette nouvelle exploration est nécessairement analytique lorsque le sujet indique les correspondances entre éléments-modèle et éléments-réponse et lorsqu'il répond aux QSEM.

c. Enfin, l'hypothèse peut être faite que le feedback de contrôle agit en retour sur la qualité de l'activité perceptive réalisée avant même de produire la réponse effective. Seule la réduction progressive du « risque d'erreur » lors de l'émission d'une réponse après sollicitation autorise la formulation de cette hypothèse qu'aucune mesure directe ne peut malheureusement confirmer ou infirmer. Toutefois, ce phénomène

1. On trouvera plus de détails sur cette analyse qualitative dans notre mémoire de licence (non publié). Essai d'analyse de l'effet immédiat et médiateur de trois types de feedback (feedback stéréotypé, feedback expliqué, feedback de contrôle) sur des sujets préopératoires, Liège, 1975.

particulièrement apparent au cours de la troisième séance peut également résulter d'une meilleure maîtrise des notions spatiales impliquées lors des deux premières séances. En effet, ces notions constituent les prérequis nécessaires à la réussite des items composant la troisième séance. De toute manière, les deux hypothèses ne sont pas incompatibles.

Le feedback de contrôle apparaît, en définitive, constituer un comportement didactique susceptible de tirer un parti utile de l'erreur. Son action se fonde sur la conviction que souligner l'inadéquation d'une conduite ou décrire les caractères formels de la bonne réponse absents de la réponse enfantine est insuffisant à générer l'ajustement d'une conduite. Bien plus, si du point de vue informationnel, le feedback expliqué et le feedback de contrôle peuvent fournir les mêmes renseignements, le « feedback de contrôle » postule que le sujet apprend mieux ce qu'il découvre lui-même. Or, engager le sujet dans une démarche de vérification qui l'oblige à une activité perceptive analytique et systématisée par la mise en correspondance, c'est — lorsque cette tentative réussit — susciter la recherche de nouveaux stimuli discriminatifs au lieu de les fournir directement par le canal verbal. La stimulation et le guidage d'un processus de découverte progressive semble donc être fécond pour provoquer l'apparition de la réponse pertinente, du moins chez des sujets préopératoires. Le contrôle qu'exerce le feedback de contrôle ou probing sur ce processus n'est pas incompatible avec le développement de l'autonomie des enfants vis à vis de l'adulte. C'est ce que nous tâcherons de mettre en évidence dans la seconde partie de cet article ¹.

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RÉSUMÉ

Cette expérience est conçue de manière à comparer l'efficacité de trois types de feedback. Trois groupes équivalents de sujets préopératoires ont été constitués sur la base d'épreuves piagétienues. Les enfants sont confrontés à une tâche impliquant des notions topologiques durant trois séances. Dans un groupe, les réponses des sujets sont évaluées par un feedback stéréotypé positif (c'est juste) ou négatif (ce n'est pas juste) selon la valeur de la réponse. Dans un second groupe, chaque feedback est complété par une explication (c'est juste parce que ..., ce n'est pas juste parce que ...). Dans un troisième groupe, les sujets sont invités à auto-évaluer et à vérifier leur performance (tu crois que c'est juste, regarde un peu pour voir). Les résultats montrent qu'en cas de réponses incorrectes, les sujets du troisième groupe corrigent mieux leur performance que ceux des autres groupes. En outre, au fil des séances, la fréquence des réponses initiales incorrectes décroît davantage dans ce troisième groupe que dans les autres groupes.

SUMMARY

Analysis of the regulatory effect of three kinds of feedback (stereotype, specific, and feedback with self-control) on preoperational subjects.
 1. *Analysis of the corrective value of the three feedback.*

This experience tries to compare the effect of three different kinds of feedback. Three equivalent groups of children at preoperational stage have been constituted on the basis of Piagetian tasks. Children are requested during three sessions to solve problems including topological notions. In one group, children's answers are unspecifically evaluated ('it's right' or 'it isn't right'). A second group receives specific feedback ('it is right because ...' or 'it isn't right because ...'). A third group is self-evaluated ('You think it's right, look and see').

In case of wrong answer, children belonging to the third group correct their answers better than the members of the other groups. Moreover, wrong answer frequencies decrease along the three sessions in the three groups, but more in the third group than in the others.

ZUSAMMENFASSUNG

Analyse vom regulatorischen Effect dreier Arten von Rückkopplung (Stereotyp, Spezifisch, und Rückkopplung mit Selbstkontrolle) auf Kinder im voroperativen Stadium.

I. Analyse des korrektiven Wertes der drei Arten von Rückkopplung.

Das Ziel dieses Experimentes ist der Vergleich dreier Arten von Rückkopplung. Durch Prüfungsverfahren nach Piaget, wurden drei gleichwertige Gruppen von Kindern in voroperativen Stadium zusammengestellt. Während fünf Sequenzen wurden diese Kinder mit Aufgaben aus dem Bereich der Topologie konfrontiert. Je nach dem Wert ihrer Antworten erhielten die Kinder der ersten Gruppe stereotyp positive (richtig so...!) oder negative (das ist falsch...!) Rückkopplung. In der zweiten Gruppe, wurde die stereotyp Rückkopplung durch eine Erklärung ergänzt (... das ist richtig, weil...; das ist falsch, weil...!). In der dritten Gruppe schliesslich, wurden die Kinder zur Selbstkontrolle angehalten, um ihre Leistung zu überprüfen (sieh mal ob's richtig ist, schau doch mal nach...!).

Die Resultate erweisen, dass im Fall unrichtiger Antworten, die Kinder der dritten Gruppe ihre Leistungen besser korrigieren als die der beiden anderen Gruppen. Im übrigen, vermindert sich die Anzahl der ursprünglich verkehrten Antworten im Laufe der Sequenzen weit mehr bei den Kindern der dritten Gruppe als bei denen der beiden anderen.

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PROFILE TYPES AS A GUIDANCE TOOL FOR EDUCATIONAL DECISION MAKING *

by

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A wide variety of formal and informal techniques have been used by the guidance worker for understanding students and helping the student understand himself. However, there is a need for still better methods and bases of variables for classifying or categorizing students into types that may suggest guidance kinds of educational planning to enable appropriate decisions for students and school personnel. A propos, this study undertook (1) an analysis of the cognitive abilities through the use of the 'Analysis of Learning Potential Test (ALPT) Advanced Battery; vocational interests - Kuder General Interest Survey (KGIS) and educational attitudes, achievement, and aspirations - Self-Concept of Learning Ability and Educational Achievement Scale (SCLAEAS) of students from the first graduating class (eighth grade) of four middle schools¹ of a large urban midwestern city in the United States, and (2) to determine if students could be grouped into well defined clusters by the Shape-Type Criteria of Profiles Analysis², and if the clusters could be used as a guidance tool for

* This paper summarizes a doctoral dissertation which was completed at Wayne State University, Detroit, Michigan 48202, in May, 1974, under the direction of Professor Claire C. Irwin.

1. The middle school concept was initiated in Detroit in 1971. It is a transition school between the elementary and secondary school. The middle school covers Grades 5-8, (ages 10-13). This study is concerned with the first graduating class of June, 1972.

2. REITZ, William and LINDSEY, J. R., 'Shape-Type Criteria of Profiles', *International Journal of Experimental Research in Education*, XII, 1, 1975, pp. 73-89.

making educational decisions as to curriculum choice or speciality areas.

Hypothetical questions to be answered were :

- (a) What are the relationships between measures of cognitive factors, sex, race, educational attitudes, achievement, aspirations, and occupational preferences ?
- (b) Can students be grouped into well defined clusters by a technique of profile analysis called Shape-Type Criteria for Profile Analysis ?
- (c) Can these clusters be used as a guidance tool for the purpose of aiding students to make wise decisions in curriculum choice or in areas of specialization ?
- (d) Will the study of profile types as a guidance tool for education decision-making have strong implications for curriculum modification or change ?

PROCEDURES

Data gathering concentrated on four of seven middle schools which featured an eighth grade. Two of the middle schools had two classes of eighth grade students, and two classes were randomly selected from each of the other two schools. Approximately 163 students (boys and girls, black and white, age range 13-15, with various socio-economic backgrounds) participated in the study.

Measures collected from the students in the sample consisted of the following types of information : test scores, vocational interest, data from cumulative records, such as attendance, grades, and tests. Both teachers and students completed various types of questionnaires.

The analysis of the test and questionnaire data was accomplished through the use of computer facilities at Wayne State University. Statistical analysis of the data was divided into four phases. *Phase One* consisted of computation of means and standard deviations on all variable for the total sample and subgroup. The total raw score of the *Analysis of Learning Potential Test* was used as the *dependent variable*. Scores on the interest test and questionnaire items were treated as *independent variables*. *Phase Two* comprised a factor analysis of the data using the Hotelling's Principal Components technique with a Varimax Rotation. *Phase Three* included a step-wise

regression analysis which was applied to the data to select significant variables. The final *Phase Four* dealt with the application of a new technique of profile analysis called Shape-Type Criteria of Profiles.

GENERAL FINDINGS

The Analysis of Learning Potential Test (ALPT)

This test was developed to predict scholastic success. The General Composite Standard Score (GCSS) of this test summarized the pupils' general school learning ability when their performance was compared with that of pupils nationally¹ at the same grade level, and making normal progress through school. The graduating eighth graders (149 pupils) from the four middle school scored within the low average range compared to national norms. Separately, the white students (55) scored within the middle average group; the black students (94) scored within the below average group.

On the Composite Prognostic Scores-Reading (CPSR), the white pupils (54) scored within the low average range; the black pupils (92) scored within the below average range. On the Composite Prognostic Scores-Mathematics (CPSM), the white group (54) scored within the below average range; the black group (92) scored within the low average range.

Kuder General Interest Survey (KGIS)

The three highest interest areas among black male pupils were Musical (70th percentile), Persuasive (44th percentile), and Literary (41st percentile). Low interest areas were Mechanical (12th percentile) and Scientific (18th percentile).

Among white male pupils, Musical (62nd percentile), Clerical (60th percentile), and Computational (54th percentile) were the three highest interest areas.

1. At each grade level, those pupils making normal progress through school were identified by using an 18-month modal age group. The GCSS is a normalized standard score having a mean of 50 and a standard deviation of 15 for the particular age-control grade sample. Approximately 80-90 percent of the total sample tested at each grade level were included within the 18-month modal-age group.

For black female pupils, the three highest interest areas were Computational (59th percentile), Persuasive (56th percentile), and Mechanical (53rd percentile). Their lowest interests were Artistic (28th percentile) and Scientific (35th percentile).

White female pupils indicated high interests in Musical (54th percentile), Outdoor (48th percentile), and Persuasive (46th percentile). Their lowest interest were Scientific (27th percentile) and Clerical (22nd percentile).

Self-Concept of Learning Ability and Educational Achievement Scale (SGLAEAS)

As revealed by the responses to the questions on the self-concept scale, both racial groups share positive feelings and beliefs about themselves in learning ability, ability to read, educational aspirations and importance of completing education programs. Black and white groups' ratings were quite similar; however, the black group usually rated themselves with the highest values. Black males usually rated themselves the highest values, and white females usually gave the lowest ratings, however, all the ratings by individuals and groups were positive which indicated that most students had a good self-image of learning ability and educational achievement.

Job Preference

Of the 149 students in the sample, 132 (89 percent) selected a job preference and 17 (11 percent) did not make a choice or were undecided.

Of the 132 respondents, 25 (19 percent) selected Manual Work, 30 (23 percent) selected Business, 11 (8 percent) selected Civil Service, 59 (45 percent) selected Professional, and seven (5 percent) selected Housewife.

A further breakdown of the data into racial groups indicated that 83 (63 percent) black students responded to the job preference question. Of this group, 11 (13 percent) selected Manual, 21 (25 percent) selected Business, 6 (7 percent) selected Civil Service, 40 (48 percent) selected Professional, and five (6 percent) selected Housewife.

There were 49 (37 percent white respondents in this group. Fourteen (29 percent) selected Manual, nine (18 percent) selected Business, five (10 percent) selected Civil Service, nineteen (39 percent) selected Professional, and two (4 percent) selected Housewife.

The *Professional* category was the most popular choice of both racial groups. *Business* was the second most popular choice of the black group. *Manual* was the second most popular choice of the white group.

Factor Analysis

Factor analysis was used to identify and describe the factor structure underlying the data. Fifteen factors were extracted from 50 variables in the order of descending percentage of variance explained. The fifteen factors identified for this sample are listed below.

1. Educational aspiration level
2. Mathematic prognostic
3. Social service interest
4. Scientific interest
5. Teachers' perception of student achievement in subject matter areas
6. Computational - clerical
7. Teachers' perception of student achievement in English
8. Evidence evaluation
9. Artistic interest
10. Persuasive interest
11. Outdoor interest
12. Literary interest
13. Mechanical prognostic
14. Reading prognostic
15. Aptitude and achievement

Regression Analysis

The selection of variables for application of the Shape-Type Criteria of Profiles Analysis Technique was achieved by application of the Step-wise Multiple Regression technique. This method recursively constructs a prediction equation with one independent variable at a

time. The first step is to choose the single variable which is the best predictor of the dependent variable. The second independent variable which is added to the regression equation is the one that provides the best predictor in conjunction with the first variable. Thereafter, proceeding in this recursive manner, variables are added step by step until the desired number of independent variables is identified or until no other variable will make a significant contribution to the prediction equation. The following variables were selected by the above method.

1. Reading prognostic test score (RPTS)
2. Math prognostic test score (MPTS)
3. Spatial Reasoning (SR)
4. Kuder - Scientific (K - S)
5. Kuder - Mechanical (K - M)
6. Kuder - Computational (K - C)
7. Kuder - Social Service (K - SS)
8. Self-Concept - « The level of school which you think you have the ability to complete » (SCLSAC)
9. Kuder - Literary (K - L)
10. Self-Concept - « What education level do you actually believe you will attain ? » (SCELBA)

Shape-Type Criteria of Profiles Analysis

The application of the technique of shape-type criteria of profiles analysis to total data record (the ten selected variables in the same order as above) completed the final phase of data analysis. Dr. JOHN LINDSEY, one of the developers of the above technique, gives the following description of profile analysis and the technique : 'A profile in its simplest form is a system of measurable parts of elements that are related in a whole. The problem of profile analysis is either (1) that of determining that a given profile resembles another profile or a centroid profile representing a group of profiles, or (2) finding clusters of profiles with similar characteristics within a given population of profiles. There are three characteristics that describe every profile. These are the elevation or mean of the profile elements, the scatter or standard deviation of the profile elements, and the shape. This latter characteristic is not well defined as the first two.

Shape is popularly defined as meaning the configuration of the profile. In the mathematical treatment of profiles, shape is usually interpreted as meaning that two profiles have the same shape if their profiles are approximately parallel. This study presents an objective definition of profile shape which will compare with the measures of elevation and scatter already in use. It then presents a taxonomy of profile types based on combinations of profiles elevation, scatter, and shape.

The measures used to define profiles shape are Pearson's B_1 and B_2 curve-type criteria of skewness and kurtosis. These are computed about the mean of the horizontal axis of the profile, thus treating the profile as though it were a frequency distribution. The numbers naming the order of the profile elements are treated as the numeric values in the frequency distribution and the scalar values of the profile elements are treated as the frequencies with which the values occur.¹

Definition of Terms

The following definitions will be used throughout the analysis of data :

Profile : a system of measurable parts related in a whole

Elevation : the mean of the set of all the equivalent scores which make up the profile – Level at which student works

Scatter : the standard deviation of the set of all the equivalent scores which makes up the profile – Uniformity of ability over profile base variables

Shape : the overall configuration of the profile in terms of curve-type criteria

Element : one of the individual scores or measurements which make up the profile²

1. JOHN R. LINDSEY, 'Shape-Type Criteria of Profiles,' *Dissertation Abstracts International*, Volume XXX, Number 10, 1970. (Dr. WM. REITZ was the major adviser.)

2. Each of the test scores or measurements that make up the profile must be identical or equivalent units of measure, and the sequence of the test must remain fixed.

The Process of Shape-Type Criteria of Profile Analysis

Shape-type criteria of profile analysis is an innovative technique of profile analysis. A step-by-step description of the process follows below :

Step #1 - All data records were converted to standard scores with a mean of 50 and a standard deviation of 10. Then, on these standard scores, indexes of skewness and kurtosis were computed for each subject by use of a computer program written specifically for this technique.

Step #2 - Quartiles for the distribution of each of the criteria indexes were computed. Each data record became a four single-digit number representing the quartiles into which each of the four indexes had fallen.

Step #3 - The individual data records (based on the ten selected variables: RPTS, MPTS, SR, K - S, K - M, K - C, K - SS, SCLSAC, K - L, SCELBA) which are now profiles, were sorted into quartiles. The descriptions of each quartile are as follows :

Quartile	Elevation	Scatter	Skewness	Kurtosis
4	High	High	Right	Cap ¹
3	High-Avg	High-Avg	None-Right	Cap-Flat
2	Low-Avg	Low-Avg	None-Left	Cup-Flat
1	Low	Low	Left	Cup ²

An example of a pattern of indexes would be :

Mean	Deviation Standard	Skewness	Kurtosis
4	1	2	4

These numbers would be read as high, low, none-left, cap, respectively. An interpretation of the above would be high elevation (mean), low scatter (standard deviation), skewed to the left slightly, and cap-shaped kurtosis. Cap-shaped kurtosis means that the scores for the data record are above the mean, while cup-shaped kurtosis

1. High scores (the 10 variables) in the middle give a cap shape : $\cap$

2. High scores on the ends gives a cup shape : $\cup$

indicates scores below the mean. A slight linear relationship exists between indexes of mean and kurtosis. To group students into clusters of a similar profile, the measures were each allowed to vary one quartile.

Step #4 - Each group of similar profiles was given a type number. The above steps were completed for *male* and *female* students separately, then as a total group. Male students were grouped into 18 clusters, female students were grouped into 19 clusters, and the total group was grouped into 27 clusters.

Description of the *male* student profile types are as follows :

Type	Elevation	Scatter	Skewness	Kurtosis	No. In Group
I	High-High Avg	High-High Avg	None-Right	Cap	6
II	Low	Low	None-Right	Flat	4
III	High-High Avg	High-High Avg	Left	Cap	2
IV	High-High Avg	Low Avg-Low	Right	Cup	2
V	High Avg	Low Avg-Low	None-Right	Cap	2
VI	High Avg-Low Avg	Low Avg-Low	Left	Flat	4
VII	High Avg	Low Avg	Flat	Cup-Flat	4
VIII	Low Avg	High-High Avg	None-Right	Cup	3
IX	Low Avg-Low	High-High Avg	None-Left	Cap-Flat	5
X	Low Avg-Low	High-High Avg	None-Left	Cap-Flat	3
XI	Low Avg	Low Avg-Low	None-Left	Cap	2
XII	Low	Low	Flat	Cup	2
XVIII	Low Avg-Low	High-High Avg	Right	Cap	3
XIV	Low	High-High Avg	None-Left	Cup	2
XV	Low Avg-Low	Low Avg-Low	Left	Cup-Flat	4
XVI	High-High Avg	High-High Avg	None-Left	Cup	2
XVII	Low	High Avg-Low Avg	None-Right	Cup-Flat	2
XVIII	Low	Low Avg-Low	Right	Flat	2
Total					55

The technique of shape-type criteria of profile analysis did cluster like students. An investigation of the data records of the individuals falling in each of the clusters supported the above conclusions. The classification of definite types on the basis of the similarity of the characteristics of test score profiles has significant educational implication. By using the shape-type criteria of profiles, students with similar data records can be identified as a group and educational plans or individualization of instruction can be developed for that particular group. In addition, the counselor can also aid the various groups with curricula selection and vocational planning.

Example of the results of shape-type criteria of profile analysis in clustering students with like-type data follows :

<i>Type I</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>Skewness</i>	<i>Kurtosis</i>
Original Profile	54.53333	11.32886	5.07906	3.86595
Curve Type Criteria	3	3	3	3

The majority of students (six in this cluster) scored moderately high to high on the spatial reading (SR) subtest of the ALPT. Most of the scores on the self-concept of learning ability (SCLA) items were above average to moderately high. Two scores were low average. The educational aspirational level of the group was above average to moderately high. This group did very well on the reading and mathematic prognostic tests of the ALPT, getting moderately high to high scores on both tests. The group had above average to high scores on the computational category of the Kuder Interest Survey. Most of the students had below average to moderately low scores on the mechanical, literary, and social services interest categories.

COUNSELING

The above students apparently have the academic skills to do well in high school. Their self-concept of learning ability and educational aspiration levels are also adequate. The computation area seems to be the area of greatest interest in comparison to the other tested areas. The counselor can review the strengths and weaknesses of the above students, and with the above knowledge, help them to make a decision regarding the selection of an appropriate curriculum according to their needs, interests and abilities. Apparently, based upon the evidence above, it appears that these students should select a college preparatory course in high school.

<i>Type VIII</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>Skewness</i>	<i>Kurtosis</i>
Original Profile	49.36666	10.98036	5.10044	3.71263
Curve Type Criteria	2	3	3	1

The students (three) in this cluster were below the mean of the spatial reasoning test. They had moderately high to high self-concept of learning ability. Two students had moderately high to high educational aspiration levels while one student was low average. Scores on the reading and mathematics prognostic tests were below average. Scores on the mechanical, scientific and social service categories of the Kuder Interest Survey were below average. Scores on the computational and literary interest categories were within the average range.

Counseling

Low scores on the reading, and mathematics prognostics tests suggest that the above students may have difficulty in the academic areas in high school. Perhaps remedial steps should be taken to strengthen their reading and mathematical skills. These students appear to have good self-concepts of learning ability and high educational aspirations which could lead to serious frustration within the students since their academic work is poor as indicated by their reading and math scores. These students had average interest in the computational area, yet had poor scores on the mathematics test. The above information is somewhat paradoxical in nature. It appears that these students are not reality-oriented and counseling may be needed to help them to get a better understanding of themselves and perhaps develop more realistic views.

<i>Type IX</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>Skewness</i>	<i>Kurtosis</i>
Original Profile	48.76665	11.15207	4.93924	3.86356
Curve Type Criteria	2	3	2	2

There were six students in this cluster. Scores on the spatial reasoning test grouped around the mean. Most of the scores on self-concept of learning ability and educational aspiration levels were below average. Scores on the reading and mathematics prognostic tests were generally above the mean. The scores on the mechanical, computational, scientific and social service of the Kuder Interest

Survey were low average to high average with a mean score of slightly above average. Scores in the literary category were below average.

Counseling

The good achievement scores and variety of interests suggest that the above students should progress adequately in high school, however, their low self-concept of learning ability, and low educational aspirations may produce a negative effect upon progress in high school. The counselor must find the reasons for low concepts of learning ability and low educational aspiration levels and devise and set into motion a plan to raise these two characteristics. Below average scores in the literary interest category suggests a curriculum area to be avoided. These students do have interest in most of the tested interest categories and should seek a curriculum that is best suited to their greatest interests, needs and abilities.

Description of the *female* student profile types follows below.

Type	Elevation	Scatter	Skewness	Kurtosis	No. In Group
I	High	High	Left	Cap	8
II	High	High-High Avg	Right	Cap-Flat	4
III	High	High Avg-Low Avg	None-Right	Cup-Flat	3
IV	High	Low Avg-Low	Right	Cap	3
V	High High Avg	High-High Avg	Left	Cup-Flat	3
VI	High Avg	High	None-Right	Cap	3
VII	High Avg-Low Avg	Low Avg-Low	None-Left	Cap	6
VIII	High Avg	Low Avg-Low	None-Left	Cup	5
IX	High Avg	High-High Avg	None-Right	Cup	4
X	High Avg	Low Avg-Low	None-Right	Cup-Flat	2
XI	Low Avg	High	Right	Cap-Flat	4
XII	Low Avg	High Avg-Low Avg	None-Right	Cup	3
XVIII	Low Avg	Low Avg-Low	None-Left	Cup-Flat	4
XIV	Low Avg	Low Avg	Right	Cap-Flat	4
XV	Low	High-High Avg	Right	Cap-Flat	4
XVI	Low Avg-Low	High-High Avg	Left	Cup-Flat	4
XVII	Low	High Avg-Low Avg	None-Left	Cap	3
XVIII	Low	Low	Right	Cap	4
XIX	Low	Low	None-Right	Cup	4
Total					75

<i>Type 1</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>Skewness</i>	<i>Kurtosis</i>
Original Profile	53.97499	14.36551	4.87225	3.89660
Curve Type Criteria	4	4	1	4

The above three examples of like profile clusters of male students show that shape-type criteria of profile analysis is quite a productive technique for planning by counselors, teachers and other educators.

The female students (eight) Type 1 had average to high scores on the spatial reasoning subtest of the ALPT. However, the mean scores on self-concept of learning ability and educational aspiration levels were below average. Most of the scores on the reading and mathematics prognostic tests were average to high. Surprisingly, most of the girls had average to high scores on the mechanical interest category. Only two girls had below average scores on this interest category.

Mean scores on the computation and scientific interest categories were moderately high. Most of the scores on the literary interest category were average to moderately high, and the majority of the scores on the social service interest category were below average to average.

Counseling

Apparently this group of female students has good reading and mathematical skills as indicated by test scores, however, their self-concept of learning ability and educational aspiration level appear to be below average. The counselor should try to find the reasons for this low self-concept and aspiration levels and try to raise them to a level which is commensurate with their tested achievement skills. These females have above average to moderately high interests in the scientific, computational and mechanical interest areas. These areas are usually associated with males. Most of the females had below average to average scores on the social service category which is a vocational area usually associated with females.

These girls apparently have the mathematical and reading skills to do good work in high school. If interests persist in the scientific,

mechanical and computational areas, the counselor should encourage them to enter curriculums in which these interests can be fostered.

Type XIX	Mean	Standard Deviation	Skewness	Kurtosis
Original Profile	45.78749	6.74364	5.02084	3.89660
Curve Type Criteria	2	2	3	2

Students in this cluster (four) appeared to be quite handicapped in achievement compared to the other female students. They scored below average on the spatial reasoning test. Their self-concept of learning ability, as well as their educational aspirations, were below average, and they also had low scores on the reading and mathematics prognostic tests. The mean scores on the mechanical, computational, scientific, literary and social service interest categories were also below average.

Counseling

The students in the above cluster apparently may have difficulty at the high school level in regard to academic work. The achievement test scores indicate that some type of remedial plan must be devised to help these students to strengthen their skills in reading and mathematics. At this time there is not any clear cut strength in vocational interest, and additional exploration in the vocational interest areas is needed. If necessary, the counselor might encourage the students to remain in school if they have thoughts of dropping out. It appears that a curriculum emphasizing remedial help in the academic areas is needed for these students.

CONCLUSIONS

The technique of shape-type criteria of profile analysis is very effective in enabling the user to identify clusters of individuals with similar profile characteristics or to assign individuals to a group having known profile characteristics. This technique leads to the

computation of four criteria indexes for each data record. The four indexes: mean (elevation), standard deviation (scatter), skewness (shape), and kurtosis (shape) describe the individual pupil profile without referring to other profiles. If the profiles were based on elevation and scatter only, they would provide only gross descriptions of profiles, however, the added dimensions of skewness and kurtosis isolate and describe the subtle characteristics in a way that would not have been evident if the usual approach to profiles of students' data had been used. By using the shape-type criteria of profiles, students with like-type data records can be identified as a group, and educational plans or individualization of instruction can be developed for the particular group.

The shape-type criteria of profile analysis technique can be very useful to the counselor. The assignment of quartile values to the mean, standard deviation, skewness, and kurtosis of the student's data records gives a graphic representation of the student's accomplishments. The counselor may cluster similar profiles, thereby identifying different types of students heretofore considered homogeneous. After clustering, the pattern of measures on the sequence of variables (sequence of variables must remain fixed) is reviewed to determine the strengths and weaknesses indicated by each of the variables. The individual students in the cluster, most likely, will have similar patterns of strengths and weaknesses on the measures in the data record. The counselor then can devise a plan for individualization of instruction, educational and vocational planning, or curriculum selection. Conferences with the individual or group may lead the students to assess realistically their abilities, interests and aspirations which may guide them to the most appropriate fields for their talents or steer them away from courses that are likely to lead to frustration and failure. The planning between the counselor and the counselee is a problem-solving process. However, eventually the student will have to make the decision about the 'best step' in educational planning, because he will be the one that must live with the consequences of decisions. In addition, the decisions made in high school may have profound effects on the future career, vocational or professional life of the student.

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SUMMARY

Purposes

The primary purposes of this study were :

1. To make an analysis of the cognitive abilities, vocational preferences, vocational interests, educational attitudes, achievements and aspirations of eighth grade students from four Detroit Middle Schools.
2. To determine if the above students could be grouped into well defined clusters by a statistical technique called the Shape-Type Criteria of Profiles Analysis.
3. To determine if the clusters could be used as a guidance tool for making educational decisions in curriculum choice or speciality areas.
4. To determine if the study of profile types as a guidance tool for educational decision-making has implications for curriculum modification or change.

Population

The sample was made up of 149 eighth grade students (boys and girls, black and white, age range thirteen to fifteen, various socio-economic backgrounds) from four Middle Schools.

Methodology

The data collected consisted of standardized test scores, vocational interest scores, cumulative file data such as test scores, attendance, grades and questionnaire response data.

Findings

1. The eighth graders (149 pupils) scored within the low average range compared to the national norm on the Analysis of Learning Potential Test. The white students (fifty-five) scored within the middle average range, and the black students (ninety-four) scored within the below average range.
2. The three highest vocational interests scores, respectively, were :
Black males : Musical, Persuasive, Literary
Black females : Computational, Persuasive, Mechanical
White males : Musical, Clerical, Computational
White females : Musical, Outdoors, Persuasive.
3. Of 132 respondents, twenty-five (19 %) selected Manual Work, thirty (23 %) selected Business, eleven (8 %) selected Civil Service, fifty-nine (45 %) selected Professional, seven (5 %) selected Housewife.
4. The teachers' perception of students' learning ability and educational achievement were generally positive. Their perceptions of white and black students as a group were virtually the same.

Both black and white groups generally had positive feelings and beliefs about themselves in learning ability, educational aspirations, self concept, the importance of completing high school, and the effect that education could have on getting a job after high school.

5. The technique of Shape-Type Criteria of Profiles Analysis was very effective in clustering similar profile characteristics or assigning individuals to a group with known profile characteristics.

Implications for Education

The counselor may cluster similar profiles thereby identifying different types of students heretofore considered homogeneous. After clustering, the pattern of measures on the sequence of variables is reviewed to determine strengths and weaknesses on each of the variables. The individuals in the cluster most likely will have similar patterns of strengths on the measures in the data record and the counselor can devise a plan for individualization of instruction, educational or vocational planning, or curriculum selection.

Recommendations

A comprehensive testing program should be initiated at the end of the eighth grade to determine weaknesses and strengths of abilities, aptitudes, achievement, interests and aspirations of students. The above information can be used in the ninth grade for educational planning, remediation, or to help the student make appropriate decision in curriculum selection.

Shape-Type Criteria of Profiles Analysis is an effective technique to categorize students into profile types or clusters. Its use is warranted.

RÉSUMÉ

Profile types comme guide dans la détermination éducationnelle.

Les buts

Les buts primaires de cette étude étaient :

1. Faire une analyse des possibilités cognitives, des préférences vocationnelles, des intérêts vocationnels, des attitudes éducationnelles, résultats et aspirations des élèves du 8ième degré, dans quatre « Middle Schools » de Detroit.
2. Déterminer si les élèves pourraient être groupés dans des entités bien définies à l'aide d'une technique statistique appelée « Shape-types Criteria of Profile Analysis ».
3. Déterminer si ces entités pourraient être utilisées comme guide pour la formation de décisions éducationnelles dans le choix du curriculum ou une totalité de spécialisations.

4. Déterminer si l'étude des profils types comme guide pour la formation de décisions éducationnelles implique des conséquences dans la modification ou le changement fondamental du curriculum.

Population

L'échantillon était constitué de 149 élèves du 8^{ème} degré (garçons et filles, noirs et blancs, âgés de 13 à 15 ans, appartenant à des milieux socio-économiques différents) de quatre Middle-schools.

Méthodes

Les données obtenues étaient fournies par des résultats de tests standardisés, des indications, d'intérêt vocationnel, des données cumulatives comme résultat de tests, participations degrés et réponses à des questionnaires.

Résultats obtenus

1. Dans l'analyse des tests sur le potentiel d'apprentissage, les élèves du 8^{ème} degré (149 élèves) appartiennent à la moyenne basse en comparaison à la norme nationale. Les élèves blancs (55) atteignent le niveau moyen, les élèves noirs (94) le niveau inférieur au moyen.
2. Les trois résultats supérieurs sur l'intérêt vocationnel étaient respectivement :
 - garçons noir : musical, persuasif, littéraire
 - filles noires : compilatif, persuasif, mécanique
 - garçons blancs : musical, clérical, compilatif.
 - filles blanches : musical, externes, persuasif.
3. De 132 répondants, vingt-cinq (19 %) choisirent du travail manuel, trente (23 %) choisirent commerce, onze (8 %) service civil (administration civile), cinquante neuf (45 %) profession artisanale, sept (5 %) ménagère.
4. La vue des enseignants sur les possibilités des élèves à étudier et les résultats de l'éducation de ces élèves étaient généralement positives. Leur perception des élèves blancs et noirs comme groupe, étaient virtuellement la même. Aussi bien le groupe des noirs que celui des blancs confessaient généralement les mêmes sentiments et les mêmes croyances au sujet de leur possibilités d'apprendre, de leurs aspirations éducationnelles, conception de soi-même, l'importance de finir l'école secondaire, et l'effet de leur éducation sur la chance d'obtenir un emploi après l'école secondaire.
5. La technique des Type Criteria of Profiles Analysis des entités était très effective pour grouper les caractéristiques similaires de profile à assigner des individus à un seul groupe à caractéristiques de profils connues.

Implication pour l'éducation

Le conseiller peut désormais grouper des profils similaires en identifiant des types différents d'élèves considérés auparavant homogènes.

Après le groupement, le modèle de mensuration est vérifié sur la séquence des variables afin de déterminer les points forts et les points faibles dans les variables. Les individus des groupes démontrent le plus souvent des similarités dans les aspects accentués, et le chercheur peut définir un plan pour l'individualisation ou l'instruction, l'éducation, l'orientation ou la sélection du curriculum.

Recommendations

Un programme d'étude d'ensemble devrait être appliqué à la fin du 8ème degré afin de déterminer les possibilités et les points faibles dans les dispositions, aptitudes, intérêts, développement et aspirations des étudiants. L'information fournie peut être employée par les responsables du 9ème degré pour une planification éducationnelle, la rémediation ou pour aider l'étudiant à constituer un programme d'étude approprié. Shape-type criteria of Profiles Analysis est une technique qui permet de grouper les étudiants dans des profiles types. Notre usage se porte garant.

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UN PAS VERS L'ÉVALUATION DU BESOIN D'ACCOMPLISSEMENT CHEZ DES ÉCOLIERS DE 10 à 12 ANS *

par

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I. PROBLÈME

La recherche centrée sur l'évaluation objective des phénomènes motivationnels est une entreprise rentable si l'on pense aux nombreux services qu'elle peut rendre à la psychologie éducationnelle.

Actuellement, on prend de plus en plus conscience de l'importance des objectifs socio-affectifs de l'éducation et de l'enseignement, sans pour cela sous-estimer les objectifs de connaissance trop longtemps restés prioritaires, sinon seuls poursuivis. En outre, l'influence de la motivation sur l'apprentissage est aujourd'hui unanimement admise.

Il serait urgent de consacrer aux objectifs socio-affectifs de l'éducation un effort d'opérationnalisation analogue à celui qui a été consenti, et l'est encore, pour les objectifs cognitifs. Les études relatives à la genèse des qualités affectives sont aussi à promouvoir. Dans ce contexte, l'étude et l'évaluation du besoin d'accomplissement (B.A.) revêt une importance particulière.

Dans un langage mentaliste, le besoin d'accomplissement se définit comme le désir de bien faire, de mieux faire, de réussir ce que l'on entreprend avec un certain brio. Il semble en effet constituer un rouage important des processus d'apprentissage et de résolution de problèmes

* L'expérience concerne des élèves de 5^{ième} année primaire dans des écoles bruxelloises (Belgique).

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et apparaît d'ailleurs en filigrane dans de très nombreux programmes scolaires, sinon dans tous. Le B.A. n'est-il pas un facteur explicatif important de nombreux apprentissages, notamment des apprentissages scolaires ?

Plusieurs recherches¹ ont démontré l'influence des attitudes éducatives et de certaines valeurs socio-culturelles sur le développement du B.A. Celui-ci serait encouragé par une éducation favorisant l'indépendance et la maîtrise. Si l'on s'accorde à donner au B.A. une valeur éducationnelle appréciable, le construct comme tel est, cependant, inutilisable. Il s'agit :

- a) de le définir non plus de façon essentielle, mais en termes de comportements (définition opérationnelle) ;
- b) de l'évaluer objectivement ;
- c) de découvrir les principaux facteurs associés à son développement ;
- d) de définir de manière précise les techniques et les conditions pratiques favorables à son développement.

D. C. MC CLELLAND et al. (1948, 1953) ont comparé des récits produits par deux groupes de sujets : l'un, placé dans des conditions stimulant le B.A.², l'autre, dans des conditions inhibant ce besoin³. Les types de productions imaginaires différenciant significativement les récits produits dans ces conditions extrêmes furent considérés comme les symptômes imaginatifs du B.A. Partant, les auteurs ont élaboré un système de catégories permettant de quantifier le B.A. (score de B.A.) exprimé dans les récits d'un sujet. Si ceux-ci sont

1. Pour un exposé de ces recherches, voir :

- MC CLELLAND, D. C., *The Achieving Society*, Princeton, N. J. : Van Nostrand, 1961, p. 336-390.

- HECKHAUSEN, H., *The Anatomy of Achievement Motivation*, New York et Londres, Academic Press, 1967, p. 150-162.

- PROGNEAUX, TH., *Besoin d'accomplissement : essai de validation du Construct*, mémoire de licence, 1974-1975, p. 62-64.

2. Achievement-oriented condition : la réussite du test est associée à des critères d'excellence (intelligence, leadership, etc.) fortement valorisés dans le contexte culturel des sujets. L'accent est mis sur la performance individuelle et sur la compétition.

3. Relaxed condition : la consigne indique clairement que la performance individuelle n'a guère d'importance. Ambiance informelle.

élaborés dans des conditions neutres¹, le score de B.A. qui leur est associé reflète le niveau actuel de ce besoin chez le narrateur.

Plusieurs études² confirment que le score de B.A. a une validité satisfaisante, au moins pour l'adulte. En témoignent des relations positives et significatives trouvées entre ce score et diverses caractéristiques comportementales de l'individu possédant le B.A. à un degré élevé (persistance élevée, prise de risques calculés, attribution de la responsabilité de ses succès et échecs à des facteurs personnels, etc.). Par ailleurs, MC CLELLAND (1961) a détecté une relation positive et significative entre le taux moyen de B.A. d'une région et le rythme de son développement économique.

Des séances de stimulation du B.A. ont été organisées pour des hommes d'affaires (MC CLELLAND, 1965) et pour un groupe d'adolescents (KOLB, 1965) dont les résultats étaient inférieurs à ceux que leur niveau d'aptitude laissait espérer. Bien que, pour en juger, l'on dispose encore d'un faible recul, ces sessions semblent avoir porté leurs fruits.

Cependant la diversité des recherches déjà menées ne peut nous cacher leur caractère limité. La plupart des études entreprises jusqu'à présent portent sur des adultes (étudiants fréquentant l'enseignement supérieur ou hommes d'affaires). La technique d'évaluation du B.A. et les résultats obtenus sont-ils valables pour de jeunes enfants aussi ?

La mise au point d'un outil valide pour évaluer le B.A. chez des enfants semble constituer un préalable à la réalisation d'objectifs plus utiles sur un plan pratique³. C'est à ce problème que nous nous sommes attachée.

Nous avons tenté de transposer à des enfants (9-10 ans) l'expérience menée par MC CLELLAND (1953) sur des étudiants universitaires et que nous décrivons très brièvement plus haut. L'objectif précis de l'expérience est de tester, sur des écoliers belges, la validité d'un test de B.A. : le TAT - n.ach. (MC CLELLAND) que nous avons adapté à nos sujets.

1. Aucune tentative délibérée pour augmenter ou réduire le besoin d'accomplissement.

2. Pour un bref exposé de ces recherches, voir TH. PROGNEAUX, *o.c.*

3. Voir points c et d mentionnés page 55.

II. PRÉSENTATION DE L'EXPÉRIENCE

1. *Population*

L'expérience concerne douze classes mixtes de 5e année primaire d'une commune bruxelloise. Ces classes ont été réparties en quatre groupes de trois classes. A chaque groupe, correspond une condition expérimentale, c.à.d. une condition d'administration particulière des épreuves.

2. *Épreuves*

Les épreuves sont communes aux quatre groupes. Elles sont collectives et se répartissent en deux catégories¹ : les épreuves préalables et l'épreuve-critère (TAT - n.ach).

2.a. *Trois épreuves préalables*

Ce sont des épreuves d'« échauffement ». Elles n'ont rien à voir avec l'évaluation du B.A., mais sont seulement destinées à plonger les sujets dans l'ambiance spécifique aux conditions expérimentales auxquelles ils vont être soumis. Ces épreuves sont les suivantes :

- une épreuve de mots brouillés à reconstituer ;
- une épreuve d'adresse graphique ;
- une épreuve de « fluidité verbale » (PMA).

2.b. *Epreuve-critère : TAT - n.ach.*

Le TAT - n.ach. utilisé ici est, comme on l'a déjà indiqué, une adaptation du test de MC CLELLAND. Cette adaptation concerne principalement le choix des images. Après avoir prétesté douze images, nous en avons sélectionné quatre : celles qui différenciaient le mieux² les sujets quant à l'expression du B.A. Les images retenues sont relativement peu structurées : sur chacune, le(s) personnage(s) « en action » est (sont) schématisé(s) par des traits. L'épreuve est chronométrée : 20 secondes pour regarder une image et 10 minutes pour composer un récit qui s'y rapporte.

1. Cette distinction n'est pas révélée aux sujets.

2. Nous avons systématiquement éliminé les images induisant toujours ou n'induisant jamais de récits concernés par l'accomplissement.

Afin d'aider les enfants à élaborer des récits complets en dix minutes, les principaux aspects à envisager leur sont rappelés sous forme de questions figurant sur chaque feuille de réponse : Que se passe-t-il ? Que s'est-il passé avant ? Que pensent les personnages ? Que va-t-il se passer ? Le testeur explicite chacune de ces questions dans sa consigne.

3. Conditions expérimentales

Trois classes ont été affectées à chacune des conditions expérimentales décrites ci-dessous.

3.1. Non stimulation

Les épreuves sont proposées par l'instituteur, sans aucune préparation, comme des exercices sans importance, destinés à occuper un temps mort, en l'occurrence une veille de vacances. Le chronométrage se fait à l'insu des élèves.

Dans cette perspective, on ne fait rien, bien au contraire, pour attiser le B.A. à l'égard de ces exercices, dont beaucoup d'élèves seront sans doute tentés de se débarrasser rapidement.

3.2. Stimulation pure

Il s'agit ici d'accentuer l'importance des épreuves, de valoriser l'effort de performance de tous et de chacun. Bref, de créer une ambiance orientée vers l'accomplissement.

D'une manière générale, les mesures suivantes¹ ont contribué à la stimulation expérimentale du B.A. Les élèves savent qu'il *s'agit d'épreuves importantes*. On leur explique que les tests proposés évaluent des qualités essentielles, choisies parmi les qualités particulièrement valorisées par la classe concernée² (capacité d'être attentif, appliqué, actif, travailleur, imaginatif, inventif, etc.). L'importance des épreuves est rappelée successivement par l'instituteur, le directeur et le testeur.

1. Ces mêmes mesures valent aussi pour les deux conditions expérimentales suivantes.

2. Au cours d'un entretien préalable avec l'instituteur, nous avons défini pour chaque classe, les qualités valorisées et le vocabulaire apte à les décrire aux enfants.

Les mêmes épreuves sont proposées à toutes les classes de 5e année de leur commune. On suscite le plus possible l'émulation en signalant notamment que l'honneur de la classe et de l'école sont en jeu. On annonce, en outre, que la classe gagnante sera récompensée par un cadeau de son choix¹.

Gagner, faire bien, faire mieux, faire *chacun* de son mieux, montrer ce dont on est capable, donner la preuve de ses qualités ... pour être fier de soi, de sa classe, pour être l'honneur de son école, pour bénéficier d'un beau cadeau. Ces thèmes sont développés par l'instituteur qui prépare ses enfants, huit jours avant la date prévue pour l'administration des tests², par le directeur de l'école qui vient présenter le testeur à la classe³, et enfin par le testeur lui-même, lors de la présentation des épreuves.

En outre, la *présentation des épreuves* est plus soignée que dans la condition de non stimulation. Les tests sont présentés ici dans un petit livret. Les élèves doivent compléter la page de couverture en indiquant leurs noms, prénom, le nom de leur école, la date du testing. Dans chacune des conditions de stimulation, nous avons joint aux autres épreuves, à la suite de D. C. MC CLELLAND (1953), un petit *questionnaire* (date de naissance, nationalité, profession des parents, résultats obtenus en fin de 4e). On essaie ainsi d'accroître la teneur en «ego involvement» de chaque condition de stimulation. Dans la condition de non stimulation, les épreuves sont *anonymes*. Il n'y a ni page de couverture, ni questionnaire.

Nous faisons l'hypothèse que l'ensemble de ces mesures induit une stimulation expérimentale du B.A.

3.3. *Stimulation avec provocation d'une expérience de succès*

Cette condition reproduit la précédente à un point près. Après les trois épreuves préalables, le testeur organise une séance de correction.

1. Afin de concrétiser cette promesse de cadeau, l'instituteur réfléchit avec ses élèves au choix de ce cadeau, dans la phase de préparation qui débute une semaine avant l'administration des tests.

2. Dans la condition de non stimulation, les élèves ne sont pas du tout préparés à l'avance.

3. Dans la condition de non stimulation, le Directeur n'intervient à aucun moment.

Au départ des scores individuels, on calcule le résultat moyen de la classe pour ces trois épreuves. Ce résultat est ensuite comparé au résultat, *arbitrairement inférieur*, de la classe censée gagner jusqu'à présent. Il s'ensuit une expérience de *succès* pour la classe avant d'aborder l'épreuve-critère.

3.4. *Stimulation avec provocation d'une expérience d'échec*

Cette condition est l'inverse de la précédente. Le résultat de la classe concernée est ici comparé au résultat, *arbitrairement supérieur*, de la classe censée gagner jusqu'à présent. La classe subit ainsi une expérience d'*échec* avant d'aborder le TAT - n.ach.

4. *Calcul des scores de B.A.*

L'application du système de correction de D. C. MC CLELLAND (1953) nous a permis d'attribuer un score de B.A. à chaque récit (quatre récits par sujet). La correction d'un récit se fait en deux phases.

La première phase consiste à spécifier la relation du récit avec le B.A. Trois cas sont possibles. L'expression d'un but d'accomplissement dans le récit est :

- claire et nette (Achievement Imagery (A I) + 2)
- sujette à caution (Doubtful Imagery (T I) + 1)
- inexistante (Unrelated Imagery (U I) 0).

La deuxième phase consiste à analyser - pour les seuls récits codés AI - la séquence comportementale orientée vers le but d'accomplissement.

En gros, il s'agit de répondre aux questions suivantes : le personnage qui poursuit un but d'accomplissement :

- exprime-t-il le *désir* d'atteindre ce but ? (sous-catégorie *Besoin* (B))
- *fait-il* quelque chose pour le réaliser ? (sous-catégorie *Activité* (A))
- se heurte-t-il à des *obstacles* ? (sous-catégorie *Obstacles* (O))
- éprouve-t-il des *affects* en relation avec ce but ? (sous-catégories *Affect positif* (Af. +) et *Affect négatif* (Af. -))
- espère-t-il réussir ? (sous-catégorie *Espoir de succès* (ES))
- craint-il d'échouer ? (sous-catégorie *Crainte de l'échec* (CE))
- recherche-t-il l'aide de quelqu'un pour atteindre son but ? (sous-catégorie *Aide* (AD)).

Chaque sous-catégorie est précisément définie dans le système de scoring de Mc CLELLAND. Chaque fois que l'une d'entre elles apparaît dans un récit, le score de ce dernier est majoré d'un point.

Afin de garantir un maximum d'objectivité à la correction, tous les récits relatifs à la même image ont été corrigés successivement afin d'éviter l'effet de stéréotypie qui serait probablement apparu si les quatre récits d'un même sujet avaient été corrigés successivement. Au moment de la correction, rien ne permettait au correcteur de savoir sous quelle condition expérimentale les récits avaient été produits.

Finalement, chaque classe et donc, chaque groupe expérimental, ont été caractérisés par un score de B.A. moyen global, c.à.d. totalisant les quatre scores partiels¹.

5. Interprétation des résultats

5.1. Choix d'une méthode de traitement

Chaque condition expérimentale a été proposée à trois classes. En nous basant sur des indices grossiers, nous avons tenté que chaque groupe soit relativement équilibré quant au niveau socio-économico-culturel² et quant au niveau de rendement³. Il n'en est pas moins vrai que l'affectation d'une classe à une condition expérimentale a été arbitraire.

Pour traiter les résultats, on a procédé à l'analyse de la variance qui prend en considération l'unité « classe » à l'intérieur de chaque groupe expérimental. Cette méthode permet de comparer des moyennes de groupes. D'une manière générale, elle consiste à décomposer la variance totale en une variance intergroupes : mesure de l'écart des moyennes de groupes par rapport à la moyenne générale⁴, et en une

1. Un score par image.

2. Appréciation globale du Directeur et de l'Instituteur - quartier de l'école.

3. Superficiellement apprécié à partir de la répartition des élèves, au sein d'une même école et d'un même niveau, dans les classes A, B ou C, ces désignations correspondant effectivement dans l'école à des rendements différents.

4. Détermination des degrés de liberté (d.l.) soit n = nombre de groupes
 s = nombre de sujets par groupe.

d.l. pour variance intergroupes : $n = 1$

d.l. pour variance intragroupes : $n (s = 1)$

variance intragroupes : mesure de l'écart entre chaque score (ici : moyenne de classe) et la moyenne de son groupe¹.

La valeur du rapport entre variance intergroupes et variance intragroupes⁴ indique la mesure dans laquelle les groupes se différencient et permet donc de déterminer si les conditions expérimentales envisagées ont effectivement eu un impact différentiel.

5.2. Examen de la validité du TAT - n.ach.

Le tableau 1 donne la moyenne (le score de B.A. global moyen) de chaque classe (C_1 à C_{12}), de chaque groupe expérimental (G_A à G_D) ainsi que la moyenne générale (M_G) et la moyenne pour l'ensemble des groupes stimulés (M_S).

TABLEAU 1.

Score de B.A. global.

G_A (Non stimulé)			G_S								
			G_B (Stimulé pur)			G_C (Stimulé succès)			G_D (Stimulé échec)		
C_1	C_2	C_3	C_4	C_5	C_6	C_7	C_8	C_9	C_{10}	C_{11}	C_{12}
4.86	2.54	2.17	8.76	3.39	4.32	8.68	6.58	4.81	5.54	5.94	7.56
$M_A = 3.19$			$M_B = 5.56$			$M_C = 6.69$			$M_D = 6.35$		

$$M_S = 6.20$$

$$M_G = 5.45$$

1. Valeur à comparer avec la valeur critique donnée par la table F de Snedecor pour un couple donné de degrés de liberté (d.l.).

a. *Analyse de la variance sur l'ensemble*

TABLEAU 2.

Sources de variation	Somme des carrés	d.l.	Carrés moyens
Intergroupes	22.4019	3	7.4673
Intragroupes	30.0772	8	3.76

Test F de Snedecor sur l'ensemble des groupes :

$$F = \frac{7.4673}{3.76} = 1.99 \quad (P < .25)$$

Ce résultat faiblement significatif ne nous autorise guère à dire que nos conditions expérimentales ont eu un impact motivationnel spécifique. Le phénomène paraît essentiellement attribuable à la proximité des trois groupes stimulés.

Notre hypothèse principale est cependant la suivante : *les sujets soumis à des conditions expérimentales de stimulation du B.A. devraient obtenir des scores de B.A. (moyens) supérieurs à ceux des sujets non-stimulés.*

Pour éprouver cette hypothèse, nous avons poursuivi l'analyse de la variance en contrastant le groupe non-stimulé (GA) avec l'ensemble des groupes stimulés (GS)¹.

b. *Analyse de la variance sur le contraste (groupe non-stimulé (GA) vs / l'ensemble des groupes stimulés (GS))*

À ce niveau, comme l'indique le tableau 3, la variance intergroupes a été décomposée en deux parties : la variance intergroupes sur le contraste (GA vs / GS) et la variance intergroupes entre GB, GC et GD.

1: $G_S = G_B + G_C + G_D$

TABLEAU 3.

Sources de variation	Somme des carrés	d.l.	Carrés moyens
Intergroupes sur le contraste (G_A vs / G_S)	20.3853	1	20.3853
Intergroupes entre G_B , G_C et G_D	20.166	2	1.0083
Intragroupes	30.0772	8	3.76

Test F de Snedecor sur le contraste (G_A vs / G_S) :

$$F = \frac{20.3853}{3.76} = .42 \quad (P < .02)^1$$

Test F de Snedecor entre G_B , G_C et G_D :

$$F = \frac{1.0083}{3.76} = < 1 \quad (NS)$$

A ce niveau, les résultats deviennent nettement significatifs et confirment l'hypothèse émise : la stimulation expérimentale du B.A. augmente d'une manière significative le nombre des productions imaginaires orientées vers le B.A. En d'autres termes, le TAT - n.ach. se révèle sensible à la stimulation expérimentale du B.A. chez de jeunes enfants, et ceci indépendamment des modalités particulières de cette stimulation.

De là à penser qu'en administrant le TAT - n.ach. dans des conditions neutres², les scores de B.A. restent de bons témoins du niveau spontané du B.A. d'un groupe ou d'un sujet, il n'y a qu'un pas, Mais, ... il reste à franchir. Ce sera une de nos préoccupations premières pour une recherche ultérieure.

1. La table F de Snedecor donne 5.32 ($P = .05$). L'hypothèse de base étant orientée (supériorité de G_S par rapport à G_A), le test est à une issue et le seuil de probabilité (P) peut être divisé en deux.

2. Si l'on ne fait rien ni pour stimuler, ni pour apaiser le B.A. des sujets.

Par ailleurs, de l'examen des tableaux 2 et 3, il ressort que la majeure partie de la variance intergroupes est condensée sur le contraste (GA vs / GS). Le test F de Snedecor entre les groupes B, C et D se révèle tout à fait non significatif ($F < 1$). Il permet d'affirmer que les conditions particulières de stimulation adoptées n'ont pas eu un impact motivationnel spécifique. Nous reviendrons plus loin¹ sur ce problème.

5.3. Analyse du système de correction, en vue de sa simplification

L'application du système de correction² requiert un temps considérable. Aussi, nous avons voulu évaluer la répercussion de sa simplification sur le niveau de signification des résultats³.

a. Prise en considération de la première phase de correction, uniquement

Pour chaque classe, et donc pour chaque groupe expérimental, on a calculé le score de B.A. moyen global⁴ obtenu en se limitant à la première phase de correction. Cette dernière consiste à classer un récit dans une des trois grandes catégories : « Achievement Imagery » (AI = + 2), « Doubtful Imagery » (TI = + 1), « Unrelated Imagery » (UI = 0). Nous appellerons *score élémentaire*, le score ainsi obtenu.

Le tableau 4 donne la moyenne (score de B.A. global élémentaire) de chaque classe (C₁ à C₁₂), de chaque groupe expérimental (GA à GD), ainsi que la moyenne générale (MG) et la moyenne pour l'ensemble des groupes stimulés (MS).

1. Voir 5.4.

2. Voir plus haut : 4. *Calculs des scores de B.A.* (première et deuxième phase du système de correction).

3. Remarque : dans les analyses de variance présentées sub a, sub b et sub c, nous ne considérerons que le contraste (groupe non-stimulé (GA) vs / l'ensemble des groupes stimulés (GS)).

4. Score global c.à.d. totalisent les quatre scores partiels (1 score par récit).

TABLEAU 4.
Scores de B.A. élémentaires.

G_A (Non stimulé)			G_S								
			G_B (Stimulé pur)			G_C (Stimulé succès)			G_D (Stimulé échec)		
C_1	C_2	C_3	C_4	C_5	C_6	C_7	C_8	C_9	C_{10}	C_{11}	C_{12}
2.87	1.73	1.57	3.74	1.87	2.72	3.95	3.14	3.53	2.96	3.67	4.16
$M_A = 2.06$			$M_B = 2.79$			$M_C = 3.54$			$M_D = 3.60$		

$$M_S = 3.31$$

$$M_G = 3$$

Le tableau 5 présente l'analyse de la variance relative aux scores élémentaires et au contraste (G_A vs / G_S).

TABLEAU 5.

Sources de variation	Somme des carrés	d.l.	Carrés moyens
Intergroupes sur le contraste (G_A vs / G_S)	3.5157	1	3.5157
Intergroupes entre G_B , G_C et G_D	1.2222	2	.611
Intragroupes	3.9128	8	.49

Test F de Snedecor pour le contraste (G_A vs / G_S) :

$$F = \frac{3.5157}{.49} = 7.17 \quad (P < .02)^1$$

1. La table F de Snedecor donne 5.32 ($P = .05$). L'hypothèse de base étant orientée (supériorité de G_S par rapport à G_A), il s'agit d'un test à une issue et le seuil de probabilité (P) peut être divisé en deux.

D'une manière générale, la structure de ces résultats est analogue à celle que nous avons obtenue pour les scores de B.A. complets. Ici aussi, la majeure partie de la variance intergroupes est condensée sur le contraste (GA vs / GS).

Quant à l'effet spécifique des conditions particulières de stimulation, les scores de B.A. élémentaires ne permettent pas non plus de le déterminer¹.

S'en tenir uniquement à la première phase du système de correction n'affaiblit donc pas – bien au contraire – la validité du TAT – n.ach., c.à.d. sa sensibilité à une stimulation expérimentale du B.A. chez de jeunes enfants.

Par ailleurs, nous nous sommes demandée si la catégorie « *Doubtful Imagery* » ne pourrait pas être fondue avec la catégorie « *Unrelated Imagery* ». Pour chaque classe, et pour chaque groupe expérimental, nous avons retenu le score obtenu en se limitant à la seule catégorie « *Achievement Imagery* » (AI = + 2). Les récits initialement codés TI ont alors été considérés sur le plan des récits codés UI.

TABLEAU 6:

Score de B.A. global élémentaire (AI = UI)

G _A (Non stimulé)			G _S								
			G _B (Stimulé pur)			G _C (Stimulé succès)			G _D (Stimulé échec)		
C ₁	C ₂	C ₃	C ₄	C ₅	C ₆	C ₇	C ₈	C ₉	C ₁₀	C ₁₁	C ₁₂
2	.73	.96	3.31	1.57	1.92	3.27	2.19	2.84	3.38	3	1.93
M _A = 1.23			M _B = 2.27			M _C = 2.77			M _D = 2.77		

M_S = 2.60

M_G = 2.26

1. Test F de Snedecor sur l'ensemble des groupes est non significatif (F = 1.24 pour 3 et 8 d.l.).

Le tableau 7 présente l'analyse de la variance relative aux scores de B.A. globaux élémentaires (AI - UI) et au contraste (GA vs / GS).

TABLEAU 7.

Sources de variation	Somme des carrés	d.l.	Carrés moyennés
Inter groupes sur le contraste (G _A vs / G _S)	4.2231	1	4.2231
Inter groupes entre G _B , G _C et G _D	.5205	2	.26
Intra groupes	4.3318	8	.54

Test F de Snedecor pour le contraste (GA vs / GS) :

$$F = \frac{4.2231}{.54} = 7.82 \quad (P < .02)^1$$

Si l'on compare cette valeur de F à celle que nous avons obtenue pour les scores de B.A. globaux élémentaires ($F = 7.17$), on constate que la suppression de la catégorie TI ne nuit en rien à la validité du TAT - n.ach. Ainsi, le *seul* fait de détecter la *présence* ou l'*absence* d'un but d'accomplissement dans un récit permet de diagnostiquer de manière très satisfaisante la stimulation expérimentale du B.A.

Ces premiers résultats sont encourageants. Ils permettent de penser qu'une importante réduction du système de correction est possible. Le gain de temps qui en résulterait serait très appréciable. En outre, la réduction du nombre de catégories à envisager ne pourrait que favoriser la fidélité de la correction.

Dans l'espoir de trouver un score de B.A. optimal, nous avons aussi procédé à l'analyse des sous-catégories. L'une ou plusieurs d'entre elles, ne seraient-elles pas significativement plus développées par l'ensemble des groupes stimulés (GS) que par le groupe non-stimulé (GA), ou *vice versa*.

1. La table F de Snedecor donne 5.32 ($P = .05$). L'hypothèse de base étant orientée (supériorité GS par rapport à GA), il s'agit d'un test à une issue et le seuil de probabilité (P) peut être divisé en deux.

TABLEAU 8. Score moyen par sous-catégorie.

Sous-catégorie	G _A (non stimulé)			G _B									Moyenne générale
				G _B (stimulé pur)			G _C (stimulé succès)			G _D (stimulé échec)			
	C ₁	C ₂	C ₃	C ₄	C ₅	C ₆	C ₇	C ₈	C ₉	C ₁₀	C ₁₁	C ₁₂	
Bonin (B)	.09	.05 .09	.13	.17	.09 .13	.12	.09	.05 .08	.11	.23	0 .12	.14	.12
Activité (A)	.39	.18 .25	.17	1.07	.35 .58	.32	1	.52 .68	.53	.81	.61 .66	.37	.54
Obstacles (B)	.26	.09 .15	.09	1.1	.26 .33	.24	.5	.43 .47	.47	.58	.17 .36	.32	.38
Aide (AD)	.17	0 .06	0	.31	.09 .17	.12	.27	.19 .26	.31	.12	.17 .16	.18	.16
Espoir du succès (ES)	.35	.05 .16	.09	.38	.13 .29	.36	.73	.10 .41	.42	.38	.28 .29	.21	.29
Crainte de l'échec (CE)	.04	0 .03	.04	.07	.13 .07	0	.05	.05 .10	.21	.04	.11 .05	0	.06
Affect positif (A) (Af +)	.17	.14 .13	.09	.76	.35 .49	.36	1	.38 .62	.47	.5	.61 .57	.61	.45
Affect négatif (Af -)	.15	.05 .06	0	.28	.09 .12	0	.09	.09 .11	.16	.12	.11 .14	.18	.11

b. Analyse des sous-catégories

Le tableau 8 donne, pour *chaque sous-catégorie*, la moyenne de *chaque classe* et de *chaque groupe expérimental*, ainsi que la moyenne générale (MG).

Le test F de Snedecor, toujours sur le contraste (GA vs / GS), est non significatif pour les sous-catégories « Besoin » (B), « Activité » (A), « Espoir du succès » (ES), « Crainte de l'échec » (CE), et « Affect négatif » (Af —). Pour les sous-catégories « Affect positif » et « Aide », F atteint, dans chaque cas, une valeur significative :

– Affect positif (Af +) : $F = 10.40$ ($P < .05$)^{1, 2}

– Aide (Ad) : $F = 6.34$ ($P < .05$)^{1, 3}

Si l'on compare la séquence comportementale orientée vers un but d'accomplissement produite par des sujets stimulés à la séquence du même type produite par des sujets non-stimulés, on constate que la première comporte plus souvent, et ce, d'une manière significative : l'expression d'un affect positif⁴ et la référence à une aide⁵.

A partir de ces résultats, nous avons tenté de déterminer un *score optimal* en prenant en considération la première phase du système de correction réduite à la dichotomie présence vs absence d'un but

1. Table F de Snedecor donne 5.32 ($P = .05$) et 11.3 ($P = .01$) pour 1 et 8 d.l.

2. Affect positif : variance intragroupes (8 d.l.) = .3173 (carré moyen : .04)
variance intergroupes (1 d.l.) = .4161 (carré moyen : .4161)

3. Aide : variance intragroupes (8 d.l.) = .0585 (carré moyen : .007)
variance intergroupes (1 d.l.) = .0444 (carré moyen : .0444)

4. La sous-catégorie « Affect positif », est codée dans un récit s'il remplit l'une au moins des deux conditions suivantes :

a – le personnage engagé dans la poursuite du but d'accomplissement exprime un (ou plusieurs) affect(s) positif(s) relatif(s) à la conquête du but d'accomplissement ou à son issue.

b – des bénéfices objectifs sont associés à l'atteinte du but d'accomplissement (exemple : « on écrira son nom dans les journaux », « il devient célèbre », « il reçoit une médaille », etc.).

5. La sous-catégorie « Aide » est codée dans un récit quand un (ou plusieurs) personnage(s) aide(nt) celui qui est, dans le récit, engagé dans la poursuite d'un but d'accomplissement. Il peut aider, sympathiser avec, encourager la personne qui s'efforce d'atteindre un but d'accomplissement. Celle-ci peut demander une aide ou simplement en accepter une.

d'accomplissement, la sous-catégorie « Affect positif » et la sous-catégorie « Aide ».

Le tableau 9 donne la moyenne (score de B.A. optimal) de chaque classe (C_1 à C_{12}), de chaque groupe expérimental (GA à GD), ainsi que la moyenne générale (MG) et la moyenne pour l'ensemble des groupes stimulés (MS).

TABLEAU 9.
Score de B.A. global optimal.

G_A (Non stimulé)			G_S								
			G_B (Stimulé pur)			G_C (Stimulé succès)			G_D (Stimulé échec)		
C_1	C_2	C_3	C_4	C_5	C_6	C_7	C_8	C_9	C_{10}	C_{11}	C_{12}
2.35	.82	1.04	4.38	1.96	2.4	4.5	2.76	3.63	4	3.78	2.71
$M_A = 1.40$			$M_B = 2.91$			$M_C = 3.63$			$M_D = 3.5$		

$M_S = 3.35$

$M_G = 2.86$

Le tableau 10 présente l'analyse de la variance relative aux scores optimaux et au contraste (G_A vs / G_S).

TABLEAU 10.

Sources de variation	Somme des carrés	d.l.	Carrés moyens
Inter groupes sur le contraste (G_A vs / G_S)	8.556	1	8.556
Inter groupes entre G_B , G_C et G_D	.8538	2	.4269
Intra groupes	6.4054	8	.8

Test F de Snedecor sur le contraste (GA vs / GS) :

$$F = \frac{8.556}{.8} = 10.69 \quad (P < .02)^1$$

Ce résultat est plus significatif que tous ceux qui précèdent.

Le score envisagé ici est dérivé d'un système de correction *fortement allégé*. Il optimise la différenciation entre le groupe non-stimulé (GA) et l'ensemble des groupes stimulés (GS). Ce score semble donc être doublement avantageux, par l'économie de temps de correction et par le gain de fidélité qu'il engendre.

Ces résultats sont significatifs et encourageants. Leur généralisation requiert toutefois qu'ils soient confirmés par des expériences ultérieures.

5.4. Examen de la hiérarchie existant entre les trois groupes stimulés

a. Effet d'une expérience d'évaluation

Aucune différence statistiquement significative entre les trois groupes stimulés n'a été révélée. La faiblesse de la composante « variance intergroupes entre GB, GC et GD » par rapport à la composante « variance intergroupes sur le contraste (GA vs /GS) »² en témoigne.

Cependant, les scores de B.A. moyens bruts des groupes stimulés qui ont subi une expérience d'évaluation sont régulièrement supérieurs à ceux du groupe « stimulé pur » (GB)³. Bien qu'il s'agisse d'indices et non de preuves, il serait intéressant d'étudier de plus près la nature et l'importance de l'incidence d'une expérience d'évaluation sur la motivation d'un enfant.

Une évaluation de qualité doit adhérer authentiquement au processus d'apprentissage, c.à.d. qu'elle doit permettre au sujet de situer son niveau d'avancement par rapport à l'objectif à atteindre. Une telle

1. La table F de Snedecor donne 5.32 ($P = .05$). Il s'agit d'un test à une issue et le seuil de probabilité (P) peut être divisé en deux. Signalons que la valeur critique de F pour $P = .01$ est 11.3. La valeur de F trouvée ci-dessus (10.69) s'en rapproche très fort.

2. Voir tableaux 3, 5, 7, 10.

3. Voir tableaux 1, 4, 6, 9.

démarche n'aurait-elle pas un effet facilitateur et clarifiant sur le processus d'apprentissage engagé, en assurant le maintien d'un certain niveau de motivation ?

b. *Absence d'effet différentiel du succès et de l'échec*

Cette absence tient, à notre avis, à la procédure expérimentale adoptée, procédure que l'on pourrait qualifier de « modératrice ». Nous avons systématiquement communiqué aux élèves un écart (positif ou négatif) délibérément réduit¹ entre le résultat effectivement obtenu par la classe et le résultat arbitraire caractérisant la classe censée gagner au moment de l'épreuve.

Ainsi, aux classes du groupe « stimulé succès », on a dit qu'il serait dommage de perdre leur avance et qu'il fallait donc poursuivre leurs efforts. Quant aux classes du groupe « stimulé échec », on a suggéré de redoubler les efforts afin de rattraper le retard.

La mise en garde comme les encouragements étaient destinés à relancer la motivation des enfants pour l'épreuve-critère.

L'expérience ne permet pas de tirer de réelles conclusions à cet égard. Elle suggère toutefois que l'étude de l'interaction entre une expérience d'évaluation – succès ou échec – et la motivation mérite d'être poussée plus loin.

6. *Discussion des conditions expérimentales*

Qu'il s'agisse des conditions de stimulation ou de non stimulation, nous avons tablé non sur un seul moyen, mais sur une panoplie de moyens. Cette option devait normalement augmenter la probabilité de succès des conditions expérimentales auprès du plus grand nombre possible de sujets concernés par chacune d'elles.

Parmi les moyens utilisés pour stimuler le B.A., quels sont ceux qui ont été efficaces ? Est-ce la promesse d'un cadeau, l'enjeu de la compétition pour l'honneur de la classe et celui de l'école, la perception par les élèves de l'adhésion de leur instituteur et du chef d'établissement à l'opération ?... Ces questions restent sans réponse claire.

Les moyens utilisés ont été, en tout ou en partie, assez efficaces pour une stimulation à très court terme. Même employés régulière-

1. +3 ou - 3 points sur un total de 75 (pour les trois épreuves préalables).

ment, quel serait encore leur impact dans la perspective d'une stimulation à long terme ?

Les éléments d'une méthodologie centrée sur le développement du B.A. chez le jeune enfant restent à identifier. De nombreuses recherches seront nécessaires pour y arriver.

7. Résumé et conclusion

La première conclusion de cette expérience est la suivante : comme MC CLELLAND (1953) l'a démontré pour des adultes, les scores dérivés du TAT - n.ach., adapté et administré à des écoliers belges, reflètent valablement la stimulation expérimentale du besoin d'accomplissement.

L'analyse du système de correction nous incite à penser qu'il peut être considérablement allégé, sans entamer la sensibilité du test à la stimulation expérimentale du besoin d'accomplissement. En cas de confirmation, on gagnerait un temps considérable lors de la correction et la fidélité de l'épreuve serait augmentée.

Des recherches sont encore nécessaires pour contrôler la validité du TAT - n.ach. adapté et administré dans des conditions neutres. Il s'agit notamment d'identifier les corrélats comportementaux du score de B.A., et notamment du « score optimal ».

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RÉSUMÉ

Cet article rapporte une expérience dont l'objectif est le suivant : tester la validité d'une épreuve projective – adaptation du TAT – need for achievement de D. C. MC CLELLAND – sur des écoliers Belges âgés de dix à douze ans.

Quatre groupes équivalents ont subi les tests dans des conditions stimulant le besoin d'accomplissement à des degrés divers.

De la comparaison des scores moyens de besoin d'accomplissement des différents groupes, les conclusions suivantes se dégagent :

1. L'épreuve projective telle qu'elle a été adaptée pour des enfants est sensible à la stimulation expérimentale du besoin d'accomplissement de jeunes écoliers ;
2. Le système de correction élaboré par D. C. MC CLELLAND peut être considérablement allégé sans entamer la sensibilité du test.

D'autres expériences devront confirmer la validité de ces conclusions.

Par ailleurs, des recherches ultérieures devraient s'attacher à étudier la validité externe du TAT – n.ach., par le biais, notamment, d'une étude corrélationnelle entre d'une part les scores de besoin d'accomplissement, et d'autre part, divers comportements recueillis par des techniques telles que questionnaires, différenciateur sémantique, échelles d'attitudes, observation directe, etc.

SUMMARY

In this research project, the validity of the TAT – need for achievement adapted from D. C. MC CLELLAND is tested on Belgian school children 10-12 years old.

Four equivalent groups were tested in condition likely to stimulate the need for achievement to different extents.

The comparison between the mean need for achievement scores of the groups indicate that :

1. The adapted projective test used is sensitive to an experimental stimulation of the need for achievement of young children ;
2. The scoring system for need for achievement elaborated by D. C. MC CLELLAND can be considerably simplified without significant loss of sensitivity.

Other experiences are needed before adoption of this conclusions.

Furthermore, further research on external validity of the TAT – n.ach. is desirable. Specifically a correlational study of the n.ach. scores in their relation with various behaviors observed with the aid of different techniques like questionnaires, semantic differential, attitudes scales, and so on.

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THE LOGIC OF THE EXPERIENCE-CENTRED CURRICULUM

by

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Although there has been a move away from the notion of school as a place for basic training in literacy and numeracy, and the curriculum is being increasingly seen as an educational rather than a training programme for adolescents, nevertheless, there remain certain great barriers to the implementation of experience or child-centred education. It is the purpose of this argument to show that there are relevant logical considerations which necessitate a move in that direction. One of the reasons for this lack of progress has been an unwillingness on the part of many people in schools to embrace a rational and critical theory of tradition. Consequently, no clear theory based on the nature of knowledge and its application to curriculum development has emerged. Moreover, the arguments have been conducted irrespective of and without much notice being taken of the main participants, namely the adolescents in the schools. Thus, what the logical and internal propositions of a case for change are have been missed or have diminished in importance. The main trend of this argument will be an attempt to show that an examination of the nature of knowledge may disclose that the main aim of the educational process is autonomy. If indeed education as a notion of autonomous development is to be meaningful, then a move towards learning experiences planned as the solution of problems will be shown to be appropriate. From these arguments, it is hoped that a logic of experience-centred education will emerge that has practical implications for curriculum planning.

Part of the problem lies in the institutional nature of the schools themselves. KARL R. POPPER points out in his *Conjectures and*

Refutations¹ that schools have endeavoured 'to impart a definite doctrine, and to preserve it pure and unchanged', rather than adapt themselves to a process of critical discussion and enquiry. This explains to some extent why it is in fact logically impossible to apply to schools and their processes a concept of education. Education of its nature implies achievement, and, therefore, change in desirable directions². If, however, schools are to be regarded as immutable institutions, founded upon permanent values³, the implication must follow that a concept of the educated man as being central to the purpose of the schools is unattainable. Such reasoning makes talk of personal development and achievement impossible. It prevents us from asking what is the central question of the education process, namely, how can we organise our schools so as to allow our pupils to know (a) about themselves, and (b) about the world. For this to be possible, it is necessary to apply a rational theory of tradition to the concept of the educated man. POPPER expresses it as follows: 'In the rationalist tradition, bold changes of doctrine are not forbidden. On the contrary, innovation is encouraged, and regarded as success, as improvement, if it is based on the result of a critical discussion of its predecessors.'⁴

Certainly, since the war in our Primary schools, there have been attempts to create desirable change. The recommendations of the Hadow Report (1933) for a curriculum founded on experience and activity rather than rote learning have transformed many of our primary schools, and made them enjoyable places for children to spend their time in. Unfortunately, it has not been the same with the secondary sphere of education. MICHAEL ARMSTRONG⁵ has summarised the barriers to logical debate which surround the Secondary school

1. p. 149, (London, Routledge and Kegan Paul, 5th Edit., 1974).

2. Reference to the criteria of education are based on R. S. PETERS, *Ethics and Education*, chap. 1, (Allen and Unwin, 1966); for the concept of the educated man, references are based on P. H. HIRST and R. S. PETERS, 'Education' pp. 25-26 in *The Logic of Education*, (R.K.P. 1970).

3. The values of an institution are to be distinguished from personal values. The values of an institution, e.g. permanence, defence, tradition can be antagonistic to personal values such as freedom, autonomy and development.

4. *Conjectures and Refutations*, p. 151.

5. 'Imprisoned in Learning', p. 2, in *Times Educational Supplement*, 5.12.75.

curriculum. 'The trouble is not just that the disagreements among the various protagonists – from RHODES BOYSON at one extreme by way of GEORGE WALKER, GABRIEL CHANNON and ERIC MIDWINTER, and CHRIS SEARLE at the other – are so acute as to make quite futile the already formidable task of constructing an agreed curriculum for the Secondary school'. According to ARMSTRONG, the protagonists seem to think that the solution of the problem lies in finding an appropriate body of subject matter which might be recognised as sufficient to provide Secondary school pupils with a decent education. He goes on to suggest that it is only the child-centred tradition which has in more than a hundred years of compulsory mass education 'understood and explored the interdependence of the curriculum, teaching methods and teacher-pupil relationships.' The tendency to ignore this mutuality of relationships has created the crisis of Secondary education.

Certainly, if we begin to consider curriculum process from the desirability of the notion of the educated man, we can give a sharper focus to the purpose of the curriculum in the Secondary school. To begin from the nature of the educated man with its intrinsic values of development and achievement is to demand from the curriculum that it is designed to produce personal qualities. This naturally suggests that the curriculum must fit the pupil rather than the other way around. Thus, the kind of interdependence of which ARMSTRONG speaks can have some chance of being achieved. Only thus can tradition begin to extend itself flexibly. This is to say that the methods of enquiry which we apply to the Secondary school must not be a defence of the status quo but rather concern themselves with finding better explanatory theories for the problems with which we are faced. It is only through problems that we can become conscious of holding a theory. Problems challenge us to learn, to advance our knowledge, to conduct experiments, and make logical relationships¹. Thus the relationship between pupil and teacher must not be seen any longer as institutional with its implication of impersonality and unchangeability, but as a covenant which gives the teacher status not from the formal authority of an institutional appointment, but as a result of a critical debate between himself and pupils about the limits of the value of whatever their mutual curriculum tasks are.

1. *Conjectures and Refutations*, p. 222.

A distinction needs to be made between institutional and adolescent aims. JAMES HEMMING¹ argues that most adolescents 'require immediate incentives and rewards.' The limits of adolescent values are to be seen as short term, even immediate, and the intermediate values of school curricula must take cognisance of this fact. Otherwise, any semblance of the kind of interdependence referred to above will be unattainable. HEMMING goes on to argue that lack of immediate motives for adolescents produces indifference to the teachers' struggles to teach, and also the indiscipline that wrecks them. 'This', he maintains, 'is the pattern of the crisis in our Secondary schools. The schools carefully work out educative programmes, teachers often slave to present them nicely, but many of the customers turn away, or half-heartedly pay a little polite attention. And yet adolescents enjoy extending their power, they want to grow into their best selves; they are gluttons for achievement and status. But often – though not, of course, always – what the school has on offer does not seem relevant to their personal needs and aspirations.' (ibid. p. 21). HEMMING thus sees the problem as belonging to the dynamics of motivation. Whereas ARMSTRONG has pointed to a solution in terms of the interdependence of curriculum design, method, and teacher-pupil relationships, Hemmings' main point seems to be that 'we should start with personal dynamics and move towards the curriculum rather than the other way around.' This is the same as saying, as has been said above, that what the adolescent is mainly interested in is himself and the world around him.

Another way of posing the problem is from those questions in which adolescents are mainly interested, namely, (a) Who am I? and (b) Who is my neighbour? If it is agreed that these are both immediate and middle term questions, and intrinsically developmental, then it makes sense to think that it is from efforts to provide an environment in which these questions can legitimately be asked that curriculum planning should begin. It would, of course, be wrong to deny that many schools have made efforts to bring a more personal and social dimension to their curriculum planning. Individualised learning, mixed ability teaching, team teaching, and elaborate pastoral

1. 'Neither stick nor cannot', p. 21, in *Times Educational Supplement*, 31.1.75.

care systems are obvious testimony to the fact that a process of self-examination is taking place in many schools. Hemmings, however, thinks that such attempts have been 'an instinctive, uncertain exploration rather than a thoroughgoing renovation which the acceptance of the dynamic principles involves. Teachers as well as pupils are becoming frustrated by the confusion of aims and purposes - between life needs and curricula demands.' This problem of the rejection of school is probably much greater in the U.S.A. than it is in England.

KENNETH CLARKE¹ writing in *Radical School Reform* shows up some of the difficulties besetting education in America. 'The pervasiveness and persistent inefficiency which characterises the school results in:

(1) Marked and cumulative academic retardation in a disproportionately high percentage of these children, beginning in the fourth grade and increasing through the eighth grade.

(2) A high percentage of dropouts in the Junior and Senior High Schools of students unequipped academically and occupationally for a constructive role in society.

(3) A pattern of rejection and despair and hopelessness resulting in massive human wastage.'

One of the popular remedies for this situation is that of the deschoolers, namely that alternatives to schooling should be found. ILLICH and VERNE argue: 'The only true form of deschooling is one that cannot be programmed. Real deschooling is going on in schools and universities as evidenced by dropping out, absenteeism, the work increasing irrelevance of what takes place in them, and "allergy to work"'.² The dissatisfaction with schools and their achievements and the lack of remedies which are being provided are gaining support in this country for a view that much of what goes on in schools is a waste of time and effort. But this is a negative attitude. The possibility of a deschooled society in the technological age is unthinkable. The problem, therefore, that has to be faced is how the curriculum can be structured in an educational setting and yet provide educational experiences of a worthwhile kind. Structures are indeed limiting when

1. KENNETH CLARKE, 'Ghetto Education: New Directions', p. 117 in *Radical School Reform*, (Victor Gollancz Ltd., London, 1971).

2. IVAN ILLICH and ETIENNE VERNE, 'Imprisoned in the Global Classroom', p. 22, in *Times Educational Supplement*, 2.3.75.

we abandon the notion that the curriculum is a means of educational rather than material achievement. The latter attitude makes of the schools competitive arenas for the upward and downward mobility of its members. Where, however, the concept of the educated man is taken to be the main aim of the school, then criteria, which are of an essentially ethical nature, are demanded¹. The normative criterion which the concept of the educated man necessarily lays down is directed not to extrinsic material rewards, but rather to intrinsic satisfaction of achievement within a range of human experiences. These may be individual or social within a curriculum context. The cognitive criterion, if by it is meant that it allows the individual to perform to the limits of his potentiality within a wide range of curriculum experiences, including emotional and aesthetic as well as the purely cognitive, presents a perspective of the individual as achieving in what we may term an autobiographical manner. That is to say, within the structural limits of the curriculum of a particular school, the student is engaged in the planning as he proceeds through the system. MALCOLM SKILBECK speaking of the primitive nature of decision making relative to curriculum planning says: 'No less primitive is the view, still widely entertained, that at some point, an individual qualifies to begin taking decisions. This is like the claim sometimes made in teaching morals and religion, that first comes the substance to be learned, and then comes the inquiry - just about to begin at the time pupils leave school. Curriculum planning need not be confined to a small team of specialists, but can involve all those concerned from the outset. This planning is itself a form of inquiry.'²

The notion of the autobiographical curriculum, namely, that to some extent the student is involved in what he chooses to learn, is pertinent to that other necessary criterion for a concept of the educated man, the methodological or procedural criterion. According to this, learning experiences in which the student participates must allow him a measure of 'wittingness and voluntariness.' Where the curriculum is

1. Cf. R. S. PETERS, 'Education and the Educated Man, p. 5 in *Philosophy of Education Society of Great Britain*, 1970.

2. 'Openness and Structure in the Curriculum', p. 118 in *The Curriculum: Research, Innovation and Change*, Ed. P. H. TAYLOR and J. WALTON, (Ward Lock Educational, 1973).

written for the pupil, even if it is done with the greatest care, there is a sense in which his personality development is pre-empted. We get the biography and not the autobiography of the student. Moreover, there is a sense in which biography is historical, and thus, to some extent, the future of the pupil has been written before he has experienced it. This amounts to an antithesis of a critical theory of tradition. Talk of the autobiographical curriculum, on the other hand, contains a sense of the present and includes the notion of the individualised curriculum. As involving the individual in a recognition of his own unique characteristics, it demands that the interaction of the pupil and the teacher to knowledge be tentative and problematical. This is what is meant by a logic of experience. If it is to be dynamic, it is essentially subject to change. The concept of the educated man, as we have argued it, is essentially experiential. By its essential criteria it is developmental. These criteria form desirable curriculum objectives. Thus the essential 'wittingness and voluntariness' which make for autonomy are emphasised throughout the learning process.

How far is it pure idealism to suggest that the curriculum can be a vehicle for autonomy? Is the notion of autonomy in an institutional setting like the school merely creating an antimony? By no means, if the kind of knowledge we seek access to on behalf of pupils is seen as objective, i.e. belonging to an autonomous third world, a world of theories in themselves which may or may not be discoverable. In this sense, which is how KARL POPPER¹ views knowledge, it is possible to see how, in fact, knowledge can transcend an institution. Moreover, the purpose of the institution becomes the purpose of the curriculum when the institution is seen as a place of opportunity, creating time and leisure for the pupil to pursue the limits of his own potentiality. In the sense that the pupil's exploration is essentially an ethical enterprise, i.e. concerned with the continuous examination of himself and his world, and that society has set aside school as an institution for this purpose, then if knowledge is seen as transcending the institution, and values are likewise freed by their relationship to knowledge viewed as limitless, there is a sense in which the school as set aside for this purpose is ethical in itself. Thus whatever extrinsic constraints may be placed upon schools, however, misguided, the

1. *Objective Knowledge*, p. 154 (Oxford Press, 1972).

purposes of those who are in control might be, whether teachers or administrators, as long as it can logically be seen that if the curriculum can be focused to a concept of the educated man, and this is logically the most desirable aim of the schools, there is a sense in which it can be stated that truth is beyond human authority¹. The institution does not, in fact, possess values. Rather it offers a protection to values considered as worthwhile for a particular purpose. Thus, the notion of constraint, which an institution may have, is diminished. Moreover, in regard to schools, where it is recognised that autonomy is the real aim of the educational process, and that the curriculum demands a plurality of experiences for optimum individual development, then a critical theory of tradition has been attained.

It follows from this that the philosophy upon which curriculum thinking is based should be centrally concerned with a view of the learner as identifiable with whatever knowledge he has come to regard as contributory to his own personal life-style worked out on a rational basis. By this is meant not that the pupil has engaged in exercises relevant to established disciplines, but that the fundamental outcomes of the knowledge he has encountered are such that in regard to himself and his environmental zone, and within the limits of his own potentiality, he can form tentative answers to problems which have arisen. The problems need not be subject based, but rather to use Professor J. F. KERR's terminology, mode based².

Thus, within the empirical mode, the person ought to be able to recognise what is meant by a state of affairs, the realities of a problem. He must also be able to take a moral standpoint on his view of a particular state of affairs as it is affecting him at any particular time. He must also be able to evaluate the situation as it affects himself in relation to other people, and make and form justifiable solutions. This is not basically demanding a programme of studies which is discipline based, nor is it saying that to arrive at particular judgements knowledge derived from subjects is unnecessary. Autonomous man is aware of issues that concern himself, he has a range of questions to ask on particular issues, and because he can view certain issues as

1. *Conjectures and Refutations*, pp. 29-30.

2. *The Problem of Curriculum Reform, An Inaugural Lecture*, (Leicester Univ. Press, 1967).

pertinent to himself and¹ as significant to worthwhile living, he can attempt continuously and creatively to form a third world for himself of deeper commitment through even closer identification with the world about him.

If questions for curriculum development are to recognise

(a) that the present situation in schools indicates that the curriculum is in need of revision, and

(b) that mode thinking should have precedence over subject thinking as the primary focus for curriculum implementation, if a concept of the educated man is to be attained, then an approach to learning must be attempted which looks to pupil achievement in terms of some other way than the traditional one of exploiting the curriculum.

Jerome BRUNER's analysis of problem solving is important in this direction. Firstly, it is necessary to see how BRUNER analyses the notion of problem solving and points beyond this to an area of problem finding. He sees problem solving in terms of 'knowing how to' rather than 'about something'. The former is a way of connecting what one has observed and encountered so as to highlight its redundancy, and therefore, to make it as obvious as possible¹. Knowing how to do something is extended by BRUNER to problem finding. He maintains that 'Problem finding comes when one senses that there remain some dark problems about whether a divisibility rule may not be consistent with another rule about minimal invariant units in algebra. Nor is it plain that the invention of calculus resolves Zeno's Paradox once for all. All these matters involve the raising of problems, rather than their solution. They require many of the same skills and some knowledge of underlying regularity of problem solving. But they basically require the location of incompleteness, anomaly, trouble, inequality and contradiction².

Problem finding as a curriculum procedure attempts to bring people face to face with such problems at first hand, and not necessarily via an artificial compartmentalisation of knowledge, which belongs rather to the input-output organisation of the factory than to the complexity of human relationships and behaviour. It is, of course, no new way of learning, namely to pose problems and to use certain subject areas

1. *The relevance of education*, p. 109 ff. (Geo. Allen and Unwin, 1971).

2. *Ibid.*, p. 111.

to help formulate and solve them. The School Council Humanities scheme is a good example of this kind. Problem finding, however, is an extension of this procedure because there is implied that the problems which are going to be raised are not going to have a neat consensus solution based on the liberal notion that social moderation is what we should be aiming at, but that when an apparent solution has appeared, further problems will immediately become evident¹. This kind of approach to learning is one that recognises that the school is in the world and the world is in the individual in the school. Moreover, an individual's development at any stage is in relation to himself as a 'person in expectancy' with his own particular problems, and feelings about ways of approaching them, and not in relation to an expected and compulsory disposition to presented forms of knowledge. The notion of the pupil as a person has increasingly to be stressed. Also he has to be seen to be looking for personal achievement related to real social contexts. His needs as a particular kind of person must be seen to extend to environmental directions which might prove self-fulfilling in a developmental sense. BRUNER describes four ways for pedagogical change related to an analysis of knowledge for personal and social relevance².

1. Knowledge should be put into a context of action and commitment. It must no longer be regarded as a purely objective phenomenon. Social science topics are particularly suitable in this context. BRUNER maintains that its issues have an inherent passion within themselves, but are vitally related to social problems – 'whether racism, crimes in the street, pollution, war and aggression, or marriage and the family.'
2. Education must concentrate on the unknown and the speculative. The reasoning behind the approach which BRUNER describes as problem finding may be in fact that there are limitations in problem solving. Problem solving suggests that a solution can be found. This is responsible for much over-structuring of learning sequences, and can become a mundane piece of topic or so called project work. The goals are too clear. The work lacks excitement and the pupils are not motivated. Problem finding, on the other hand, invites the idea of a

1. See FRED INGLIS, 'Ideology and the Curriculum', in the *J. Curr. Stud.*, Vol. 6, No. 1, (May 1974).

2. *The Relevance of Education*, pp. 115-17.

solution where in fact there may be none. Finding problems as an idea for learning suggests that having to postpone solutions is a way of motivating people to get deeper into problems. Problem finding recognises that some areas of living are potentially changeable and developmental rather than soluble. This has implications for freedom and a person's general approach to living. This notion is one that can be seen implicitly to reject conformism both at the individual and social levels.

3. The process of learning must be shared with the learner. The learner as well as the teacher must be made aware of the goals he is trying to seek. This is not a plea for a purely pupil centred curriculum, but as BRUNER suggests, all learning is individual anyway. What he is getting at is that achievement may be greater where the pupil or student has had a say in the setting of his learning goals.

4. The school timetable must allow for an experimental approach to the curriculum. BRUNER suggests that alongside the traditional curriculum, two days in each week, for example, Tuesday and Thursday could be put aside for a genuine, experimental, problem finding curriculum. — 'Let it be as controversial as needs be. We are lacking diversity in experiment and can afford controversy to get it. Tuesdays and Thursdays need be no respecter of conventional teaching qualifications. Indeed it might provide the proper occasion for bringing outsiders into the school and "hooking" them with its challenge... What I am proposing involves a vast change in our thinking about schools, about growth, about the assumption of responsibility in the technological world as we know it. I have wanted to highlight the role of intention and goal directedness in learning and the acquisition of knowledge and the conversion of skill into the management of one's own enterprises. The objective is to produce skill in our citizens, skill in achieving goals of personal significance, and ensuring a society in which personal significance can still be possible'.

1. Mention has been made above (p. 83) to KARL POPPER's notion of an autonomous third world of knowledge. POPPER further maintains that whereas the second world of knowledge is our own understanding of a theory or theories, the third world contains theories in themselves. It has a real though indirect relationship with the first world through the intervention of science and technology which apply theories to the first world and thereby introduce

What has been suggested is that problem finding be seriously considered as a worthwhile curriculum procedure. The achievement of the pupil is not necessarily to be measured in terms of academic success, but in terms of the impact of allowing individuals to pursue their own identities in problem finding directions. The success of the pupil is not so much, for example, 60 per cent success in geography, physics, etc. but a heightened awareness of the physical world, its scope and breadth, the individual's relationship to it, and, therefore, in view of the world's complexity, the need of the individual for other people.

No explicit attempt has been made to see what the teacher's role is in learning conceived as problem finding. However, this notion by no means precludes the teacher. If problem finding is to be adopted as a method of instruction, then, of course, it is logical to suppose that the teacher should understand the rationale upon which it is based. Such a theory is not to be thought divorced from the way the teacher acts in the classroom, but rather it is a view of instruction which shows the teacher acting out the theory. Just as teaching as an activity cannot be understood without a concept of learning, so a theory of instruction, for example, problem finding, is to be thought of as the method of the pupil's activity. The teacher's task is to provide the pupil with the opportunity to pursue a way of thinking that belongs to the nature of the area under discussion. In 'Towards a Theory of Instruction' BRUNER states: 'In creating a new course, the problem of finding embodiment of ideas in these modes (in this case, perhaps areas of concern - my bracket) is, of course, central to the idea of the "psychology of a subject". So plainly the "psychology of subject matter" is very close to the subject matter itself, and when one speaks of the "psychology of mathematics", it is an enterprise as close to mathematics as it is to psychology.'¹ This is not a new idea,

changes into it. (*Objective Knowledge*, pp. 155-58). It may be that POPPER's third world can be seen as analogous to those areas in which BRUNER (*op. cit.* p. 111) sees problem finding taking place. Again (p. 181, *Objective Knowledge*) there is a parallel with BRUNER's idea of problem finding where POPPER maintains that the task of the teacher is to try to get all pupils to come to grips with 'some live problem. And this can only be done by trying to solve it and failing to solve it.'

1. p. 155, (Belknap Press, Harvard, 5th printing, 1971).

but a change of emphasis on the part of the teacher is called for, i.e. not only teaching about but rather teaching how, while the learner is not only learning about but simultaneously learning how. Thus the theory and the method are integrated. One proceeds on the basis of the other.

This kind of thinking about the curriculum, involving the idea of problem finding, might help to highlight the fact that at the very centre of the educational enterprise is the endeavour to enable students at all levels to fashion their own objectives and perspectives. As a first step, the following suggestions may prove helpful :

1. To undertake a rigorous analysis of subject syllabuses aimed at revealing connections between one subject and another.
2. To develop a perspective which views the curriculum as a whole, as a paradigm of the developing personality, rather than as a timetable of isolated activities and subjects impersonally organised.
3. To develop a theory of instruction which sees the curriculum as a transaction between persons at all levels.

CONCLUSIONS

1. An attempt has been made to show that the curriculum can only develop when it is seen to be dynamic, i.e. it has subjected its traditions to rational criticism.
2. A theory of curriculum as dynamic can only occur when it is conceived as the criterion for a concept of the educated man.
3. The concept of the educated man, as being concerned with values, knowledge, and procedures which are necessarily developmental and personalised necessitates that curriculum procedures should relate to the individual as a unique and developing consciousness.
4. Problem solving and its extension to problem finding have been suggested as the best means of curriculum development if the most essential outcome of the years in school is seen as the autonomous individual.

SUMMARY

An attempt has been made to show that the curriculum can only develop when it is seen to be dynamic, i.e. it has subjected its traditions to rational criticism.

A theory of curriculum as dynamic can only occur when it is conceived as the criterion for a concept of the educated man.

The concept of the educated man, as being concerned with values, knowledge and procedures which are necessarily developmental and personalised necessitates that curriculum procedures should relate to the individual as a unique and developing consciousness.

This implies a distinct change in the pupil-teacher relationship. It must no longer be seen as institutional in a contractual sense, but as a covenant in the personalised sense of that word. The notion of the autobiographical as opposed to the biographical or pre-empted curriculum demonstrates the education process as necessarily critical and includes the idea of individualised learning.

Thus the pupil is led to a recognition of his own unique characteristics. This demands that the interaction of the pupil and teacher to knowledge be tentative and problematical. This is what is meant by the logic of experience.

Problem solving and its extension to problem finding have been suggested as the best means of curriculum development if the most essential outcome of the years in school is seen as the autonomous individual.

RÉSUMÉ

La logique du curriculum centré sur l'expérience.

Une tentative a été faite pour montrer que le programme d'études ne peut se développer que lorsqu'il se révèle être dynamique, c'est à dire qu'il a soumis ses traditions à la critique rationnelle.

Une théorie du programme d'études en tant que dynamique ne peut exister que lorsqu'elle est conçue comme critère du concept de l'homme éduqué.

Le concept de l'homme éduqué touché par des valeurs, des connaissances et des règles de conduites qui sont nécessairement évolutives et personnalisées exige que les méthodes de programme d'études se rapportent à l'individu en tant que conscience unique et en évolution.

Ceci implique un changement distinct dans les relations élève-maître. Elles ne doivent plus apparaître comme institutionnelles au sens contractuel mais comme convention dans le sens personnalisé que ce mot peut avoir. La notion des études autobiographiques opposée aux études biographiques ou préemptées révèle le procédé d'éducation comme nécessairement critique et inclut l'idée d'apprentissage individualisé.

Donc, l'élève est amené à reconnaître ses propres caractéristiques. Ceci exige que l'interaction de l'élève et du professeur vers la connaissance soit expérimentale et problématique. C'est ce qui est impliqué par la logique de l'expérience.

On a suggéré que la résolution d'un problème et finalement la découverte d'un problème est le moyen le plus efficace du développement d'un programme si on considère que le produit le plus essentiel de toutes les années à l'école c'est l'individu autonome.

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'Why Polys need a new concept of knowledge', *Times Educational Supplement-Higher*, 23rd. April 1976.

'Curriculum Objectives, a cautionary note', *Journal of institutes of Durham and Newcastle*, April 1976.

COUNTERBALANCED DESIGN APPLIED TO THE STUDY
OF THE DIFFERENTIAL EFFECT OF PERFORMANCE
AND NON-PERFORMANCE OBJECTIVES
ON COGNITIVE LEARNING *

by

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INTRODUCTION

Catalogue descriptions, course outlines, or bibliographies frequently are the only guides students receive prior to or through a course of instruction. Most college professors will attest to the ambiguity of catalogue descriptions, published a year or more prior to instruction.

More recently, with the growth of behavioral psychology, a technique of specification of instructional outcomes has been developed. Called variously 'performance goals or objectives,' 'behavioral objectives,' specification usually involves the statement of expected behavior to result from learning experiences provided. In format, the specification identifies the performer (or subject) of the behavior, the conditions under which the performance is to occur, the behavior specified in both observable and measurable terms. In this study, the

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terms 'performance' and 'behavioral' will be used interchangeably.

MAGER (1962), one of the first advocates of this form of specification of learning outcomes, favorably contrasts their use with other methods when he stated that: 'Course description does not explain what will be accepted as adequate achievement; it does not confide to the learner the rules of the game. Though a course description might tell the learner which field he will be playing on, it doesn't tell him where the goal posts are located, or how he will know he has scored' (p. 6).

TYLER (1964) studied how college students determine the instructional intent of the professor and concluded that students relied upon:

1. the textbook assigned
2. other students
3. examinations

but not from the explicit specification of the instructor.

Some advantage can be granted for clarity of behavioral objectives and improved communication over non-performance objectives. However, the key questions still remain:

1. Do behavioral objectives contribute to more learning when used, as compared to when they are not used?
2. Could learning be increased through addition of other factors to the performance objective? Specifically, would the addition of a rationale – the reason or why of a performance objective – more likely result in student learning?

The foregoing are gnawing questions which should be definitively answered through experiments.

There is currently no conclusive evidence to indicate that the use of performance objectives significantly improves achievement of learners over achievement from more traditional classes that do not use performance objectives. Previous studies report a range of conflicting results. For example, BAKER (1967) found no significant differences among and between the items directly measuring the objectives. TRUE (1973) also concluded that by overtly revealing performance objectives, there was little or no effect on achievement. On the other hand, WEINBERG (1970) conducted a questionnaire study in which he investigated the effect of presenting varying specificity of course objectives to students on learning motor skills and associated

cognitive material. The study concluded that preference for receiving objectives and a positive feeling toward the guidance function of objectives were indicated by the responses to the questionnaire. DALIS (1969) concluded that students receiving precise information prior to instruction on what was expected of them showed greater achievement than those students who received vague or unrelated information. The overall treatment effect, he reported, was significant beyond the .01 level.

The Problem

In order to assess the value of using performance objectives in an instructional setting, the current problem is one of studying the differential effect of performance and non-performance objectives on the cognitive achievement as evidenced by the gain-scores. This study will be concerned primarily with the cognitive domain achievement rather than affective or psychomotor domains of learning.

Hypothesis

This study was based on the following null hypothesis :
There will be no difference between the gain-scores of the subjects that used performance objectives and the subjects that did not use performance objectives at a .05 level of significance.

The Population

The 62 subjects that participated in this study were drawn from the population of teacher education students in the College of Education, Wayne State University. They enrolled in a precertification teacher education course titled, 'Education of Exceptional Children.'

The main rationale for using this group of subjects are .

1. The professors that cooperated with the writer in this study had not previously used performance objectives for their courses.
2. The population was large enough to permit the use of a counter-balanced design for this study.
3. The professors were willing to allow for all the experimental and control variables used in this study.

Some Participant Cognitive Characteristics

Table 1 illustrates the proportion of graduate and undergraduate students in Group A as approximately the same as in Group B. The Honor Point Average of both groups are also approximately the same according to the various college year levels.

TABLE 1.

*Ranking of college year level by groups and
honor point average (N = 62).*

College Year Level	Group A	Group B	Group Totals	HPA *							
				2.0-2.5		2.6-3.0		3.1-3.5		3.6-4.0	
				Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B
Junior	11	15	26	3	7	8	7	0	1	0	0
Senior	0	3	3	0	1	0	2	0	0	0	0
Graduate	12	14	26	0		0		7	9	5	5
Unclassified	5	2	7	2		3	2	0	0	0	0
Totals	28	34	62	5	8	11	11	7	10	5	5

* Honor Point Averages : 4.0 = A ; 3.0 = B ; 2.0 = C

Limitations

No claim is made for the following :

1. That the subjects used in this study make up a representative sample of all students either at Wayne State University or across the nation. As a group, the subjects did represent a wide variety of social and economic levels and previous educational achievements.
2. That the results of this study are generalizable. The reader may, however, find the results relevant or applicable to a similar class or course setting.
3. That the audio-visual delivery system is superior or inferior to an environment where audiovisual is not used. Audio-visual recording was used to provide consistency in the amount of lecture materials received by both groups participating in this study.

4. That the use of a counterbalanced design will eliminate interpersonal differences among participating students. Within the limits of this study, this design does permit the participation of all subjects in both the experimental (or performance objectives) and control (or non-performance objectives) variables.

5. That this study comprehensively dealt with the efficacy of the evaluative tools and standards used for the measurement of performance objectives' effectiveness over non-performance objectives. However, the evaluative tools used for this study will permit the estimation of cognitive gain-scores of the subjects.

METHODOLOGY

Audio-visual lecture materials were administered to two groups of students drawn from the College of Education, Wayne State University. The experiment lasted six weeks. Pre-test was given during the first week of the study while post-test was administered at the conclusion of the treatments. The steps involved are given below :

The Experimental Design

A 'Counterbalanced Design' (VAN DALEN, 1973, p. 299), was used in this study. According to CAMPBELL and STANLEY (1969), under the heading Counterbalanced Design 'came all of the designs in which experimental control is achieved or precision enhanced by entering all respondents into all treatments.' (p. 50) This statement was the main support for choosing this design. Other designs in which subjects are distinctly separated would have confounded the results of this study because of factors, such as, sex differences, age, and other demographic variables. VAN DALEN (1973), in supporting Campbell and Stanley, stated that: 'The non-randomized groups ... are not equivalent in all respects, some differences in them, such as the superior intelligence of one group, may be mistaken for the effect on X. This counterbalanced design rotates or cancels out these initial Ss differences and hence attains a kind of group equation' (p. 301).

The structural illustration of counterbalanced design used in this experiment is shown in Table 2.

TABLE 2.

Counterbalanced design as used in the administration of this study showing time, treatments, groups, and lecture content.

Time (a)	Treatment		Lecture Content
	X ₁ (PO) (b)	X ₂ (NPO) (c)	
T ₁	Pre-Test		
T ₂	G _A (d)	G _B	C ₁ (e)
T ₃	G _B	G _A	C ₂
T ₄	G _A	G _B	C ₃
T ₅	G _B	G _A	C ₄
T ₆	Post-Test		

(a) Each time unit represents one week.

(b) Experimental treatment using performance objectives (PO).

(c) Treatment not using performance objectives (NPO).

(d) G_A equals Group A; G_B equals Group B.

(e) Lecture content used in the time period, i.e., in time period 2 (T₂) content No. 1 was applied.

The major considerations for choosing this design are :

1. *Randomization* : The administrators, during the preplanning of this study, insisted on retaining the two classes used for this study intact.
2. *Secrecy* : Subjects were not to know that they were participating in an experiment.
3. *Full-Time Employment* : Forty-five of the sixty-two, or 73 percent of the subjects were working full-time and chose each particular class for employment convenience.

VAN DALEN's (1973) observation that : 'School administrators are often reluctant to disrupt the school schedule to meet the randomization requirements (of an experimental/control group division) but they may cooperate with an experimenter if he is willing to use intact classes for an experiment' (p. 299), was borne out in this experiment.

Construction of the Materials

Nine units of instruction were prepared by a regular instructor of the course. Each unit consisted of one hour of lecture. These lectures were in due time video-taped by a former instructor of the subject for presentation through a videotape playback hardware. The lecture content, audiovisual unit number, and the test items per unit are identified in Table 3.

TABLE 3.

A weekly breakdown of lecture content titles, audiovisual units, and number of test items for each weekly unit.

Week	Lecture Content Titles	Audiovisual Units ^a	Number of Test Items ^b
One	Educ. of Exceptional Children : An Introduction - Review of Michigan Special Education Code Act. No. 198 of 1971.	1 & 2	1-20 (20)
	Who is the exceptional child ?	3	21-30 (10)
Two	The Incident of Mental Retardation Speech and Voice Disorders	4	31-40 (10)
		5	41-50 (10)
Three	Early Intervention for School and Preschool Children	6	51-60 (10)
Four	Educating Culturally Different Children Under Six Center for Multi-Handicapped	7 & 8	61-80 (20)
	Evaluation of the Detroit Pre-School Children	9	81-90 (10)

NOTE : The total number of audiovisual units = 9. The total number of test items = 90.

^a Audiovisual units are hourly based. In 'Week One' for instance, 3 units of one hour each were presented (Units 1, 2, & 3) to the participants.

^b The numbers in this column represent the test items composed for each lecture content. The numbers in brackets represent the cumulative total numbers of questions for each lecture content.

The following books were some of the helpful guides in the writing of the performance objectives used in this study - BLOOM (1956),

MAGER (1962), KRATHWOHL (1964), LINDVALL (1964), KIBLER (1970), GAGNÉ (1965a), and GEIS (1972).

During the construction of the performance objectives and test materials, the instructor who recorded the lecture supervised the content adequacy for completeness. For understandability, the performance objectives and the test materials were field tested. Ten first-year level college students were asked to read the materials and indicate words that were either ambiguous or that connoted a double meaning. As the field test participants read the materials, words that were identified as unclear were substituted by using other words from ROGET's *Thesaurus*. Each word or statement substitution was further given to the same ten subjects to ensure the retention of the original meaning of the text and the clarification of any originally identified ambiguous word or statement.

Test content was also examined by the cooperating professors for adequacy. In other words, the professors were requested to determine whether the test items were adequately able to test for the materials contained in the lectures. They accepted the tests as adequate and used the raw data score of the post-test to distribute midterm grades to their students. These two cooperating professors, the recording professor, and the ten first year college students were the principal sources for determining the tests' adequacy.

Data Collection

Listed below are the steps taken in the collection of data used in this study :

1. Four weeks before the first meeting of the two classes, treatment materials were given to the cooperating professors for preview and planning uses. Such materials included :

- a) Videotapes.

- b) Copies of performance objectives and description of lecture.

Test materials were kept by the writer and brought to the respective classes when they were called for in the design.

2. Apart from the first and sixth week of the treatments, an audio-visual technician was employed, as a precautionary measure. The technician was in attendance on each of the treatment days.

3. The cooperating professors administered both pre- and post-tests. The writer collected the materials when the tests had been completed.

4. The study sessions were jointly supervised by the cooperating professors and the writer.

5. A typical class session involved :

a) Presenting in writing the performance goals and rationale to the experimental group for the unit.

b) Presenting the videotape lectures to the group.

c) Providing a period of discussion and feedback by the participants. The participants were encouraged to explore the content viewed. Questions for clarification of content were answered by the professor.

Statistical Procedure

Even though all 62 participating students were included in both the experimental and control treatments, a pre-test was administered to the two separate classes to determine if, at a .05 level of significance, any initial differences exist between the two groups. The test items were segmented into four separate sections to correspond with the treatment lecture contents, e.g., Tests 1, 2, 3, and 4. A 4-t-test analysis was used for significance testing between the control and experimental scores. The Student t analysis of variance was used in all the t-tests. An SPSS (Special Package for the Social Sciences) computer program available through the Wayne State University computer facility was utilized.

RESULTS AND DISCUSSION

Initial Test Result Differences in Groups

In the administration of the four pretests, results from three of the tests show significant differences as between the two groups. Group A consistently scored higher on the pretest, as shown in Table 4. In Test No. 1, the mean of Group A was 15.29 as compared with the mean of Group B of 14.21 (Table 4), a difference of 1.08. This difference was not significant at the .05 level. However, the mean differences in Test Nos. 2, 3 and 4 were significant. With initial differences as indicated in pretest scores and the means of Group A exceeding those of Group B, the counterbalancing design would appear to have been appropriate.

TABLE 4.

*Analysis of variance of pretests between Group A (N = 28)
and Group B (N = 34).*

Test Items	Test No.	Mean		Mean Difference	t-Value	df	2-Tail Probability
		Group A	Group B				
30	1	15.29	14.21	1.08	1.02	60	0.313 *
20	2	8.08	6.45	1.73	2.87	56.92	0.005
10	3	4.43	2.88	1.55	3.57	59.45	0.001
30	4	15.14	11.06	4.08	2.48	59.46	0.016

* $P > .05$

A relation exists between the pretest scores and the test items attempted on the pretest (Table 5). In other words, the higher the pretest score, the greater the percentage of test items attempted. This relationship exists in both groups. For example, in Test No. 1 with a total of 30 questions, Group A did not attempt 2 percent of the total number of questions available. Group B, on the other hand, did not attempt to answer 37 percent. From the 98 percent test items attempted by Group A, they answered correctly 51 percent of all questions available.

On the other hand, Group B answered 48 percent of the total questions available correctly but had attempted to answer but 63 percent. Table 5 shows the relationship between the percentage attempted and the percentage of total questions answered correctly by each group.

TABLE 5.

Relationship between percent of total questions attempted and percent of the total questions answered correctly by groups A and B in the pretest.

Test No.	Group A (N = 28)		Group B (N = 34)	
	% Attempted	% Answered Correctly	% Attempted	% Answered Correctly
1	98	51	63	48
2	95	41	78	32
3	94	45	61	29
4	86	50	59	36

Differences in the Degree of Freedom

The reader may notice that the degrees of freedom used differed between test numbers (Tables 4 and 6). In some cases, the degrees of freedom was 60 and in others the figures varied from 47.58 to 59.46. This disparity was explained by NIE *et al.* (1972) standard for S.P.S.S. (Statistical Package for the Social Sciences) analysis of variance. They state that: 'If the [2-Tail] probability for F [F in this case stands for F Value] is greater than ... [the level of significance that is being tested for, which in this study is .05] the H_0 is accepted; t based on the pooled variance estimate ... should be used.

If the [2-Tail] probability for F is less than or equal to ... [the level of significance that is being tested] H_0 is rejected; t based on the separate variance estimate ... should be used' (p. A-017-244-08).

Therefore, depending on the figures of the 2-Tail probability for F Value, the pooled or separate variance estimates were used. The reported data contained each of the values applicable to either the pooled or separate variance estimates.

Post-Test Analysis of Variance

Group A scored significantly higher than Group B in the first subtest of the four, but not in the other three (Table 6). It is interesting to contrast the foregoing with that of the pretest on the same set of questions. Test 1 was the only one in which a significant difference was not demonstrated. The reverse is true in Tests 2, 3, and 4. Significant differences between Group A and B scores at the .05 level were found in the pretest but not in the post-test (Table 6).

Contrasted with the number of test questions not attempted in the pretest, all the subjects attempted all 90 post-test questions in the four tests. As the reader may have noted, Group B, without the experimental treatment (x_1) scored higher than Group A in Test No. 3 but not significantly so as compared to Test 1 where Group A had the experimental treatment and scored significantly higher than Group B.

TABLE 6.

Post-tests analysis of variance showing the mean scores and treatment variables (X_1 , X_2) administered to Groups A and B on each test number.

Test Item	Test No.	Mean Scores and Treatment Variables		Mean Difference	Value t	df	2-Tail Probability
		Group A	Group B				
30	1	21.82(x_1) ^a	19.15(x_2)	2.67	2.41	60	0.019 *
20	2	13.39(x_2)	11.47(x_1)	1.92	1.76	47.58	0.085
10	3	5.64(x_1)	5.74(x_2)	-.10 ^b	-.16	50.62	0.874
30	4	21.60(x_2)	19.94(x_1)	1.66	1.71	58.68	0.092

* significant at .05 level.

^a The characters in parentheses represent the treatment variables (x_1 = experimental ; x_2 = control).

^b The negative signs show items that favor Group B.

Gain-Score Analysis

Regardless of the group subjected to the experimental factor, the means of group gain-scores were higher on the post-test than the pretest (Table 7).

However, the mean gain-scores are depressed by losses or no gains in scores of some students in the post-test over the pretest (Table 8). In Test 3 combining the N of the population, 15 students in number or approximately one-fourth of all students registered either no gains or losses. Perhaps the number of test items (10) and the pretest mean of 6.5 and 4.5 correct responses respectively for Groups A and B provided too few unknown items for a gain to be reflected as a result of the instruction.

TABLE 7.

Mean pre- and post-test gain-scores for groups A ($N = 28$) and B ($N = 34$) given the experimental (X_1) and control (X_2) treatment variables.

No. Test	Group A Mean Scores and Treatment Variables		Mean Gain-Scores for Group A	Group B Mean Scores and Treatment Variables		Mean Gain-Scores for Group B
	Pre-Test	Post-Test		Pre-Test	Post-Test	
1	15.29	21.82(x_1)	6.53	14.21	19.15(x_2)	4.49
2	8.18	13.31(x_2)	5.13	6.47	11.47(x_1)	5.00
3	4.43	5.64(x_1)	1.21	2.88	5.73(x_2)	2.85
4	15.14	21.61(x_2)	6.47	11.06	19.94(x_1)	8.88

Perhaps the content and its presentation produced a pall effect which buried the experimental factor. Examining Group A in which the experimental factor was administered in the third week of content, 9 of 28 in number of Group A or approximately one-third registered no gain or a loss. Observation by the investigator did not reveal any conditions different or special conditions in this presentation from the other three. While the above is speculation, the facts do reveal that some one-fourth of the participants did not learn content, as measured by the 10-item subtest gain-scores, covering the third week of content, Unit 6 of instruction. Accompanying the above, there were also minimal 'no gains' or 'losses' in the results from Tests 1 and 2, but all participants reflected gain-scores in Test 4. Whatever the cause or causes may be, the intervening variables seem to have buried the experiment factor that was attempted to be measured.

TABLE 7.

Gain (loss) in pre- and post-tests scores according to test items and individuals in Groups A and B.

Gain (Loss) Item Interval	Groups							
	A (N = 28)				B (N = 34)			
	Test 1 (30)	Test 2 (20)	Test 3 (10)	Test 4 (30)	Test 1 (30)	Test 2 (20)	Test 3 (10)	Test 4 (30)
1 - 3	5	8	6	6	8	4	12	2
4 - 7	11	12	3	17	15	21	14	13
8 +	11	7	0	4	9	7	2	19
No Gains or a Loss in Post-Test Score	1	1	9	0	2	2	6	0

MAJOR CONCLUSION

Within the scope and limitations of the current study, the following null hypothesis is accepted: At a .05 level of significance, there will be no significant difference between the gain-scores of the students that used performance objectives and the students that did not use performance objectives.

Evidence Supporting the Major Conclusion

Gain-scores from pre- to post-tests covering three of four weeks' content reflected no significant differences as between the experimental factor (performance objectives plus specific rationale) and control (non-performance objectives).

The test from one of the four weeks' content did yield a significant difference favoring the experimental factors, but this was not enough to discount the three weeks that showed no significant differences.

Other conclusions that were drawn from this experiment are:

1. There was some evidence of a pall effect in the test results, and the pall effect seemed to be present when both the experimental or control variables were tested. A total of 21 subjects in number or

34 percent of the subjects did not gain or lost from one to seven points in the post-test, compared with the pre-test scores.

2. The concentration of content in nine hours of videotape lectures spread over four weeks may have produced a communication overload that nullified the positive effects of the experimental factor over the control.

3. The technique of videotaped presentation was different from professor-to-student lecture method and may have also served to influence the resulting test scores more than the treatment variables. In fact, the multiple delivery systems that could have been substituted for the one used, each or combinations of them might have reflected different results.

4. The testing instruments themselves, though possessing face validity and representing a normal classroom evaluation technique, would need to be calibrated in a more vigorous manner to insure consistent measurement of content covered. Any or all of the intervening variables could have influenced the results toward accepting the null hypothesis.

SUMMARY

Setting up a 'win-lose' situation for P.O.'s and non-P.O.'s is, in the investigator's opinion, self-defeating. It not only prevents a concerted effort on the part of educators in finding the beneficial aspects of adding P.O.'s to existing education processes, it fosters destructive divisiveness of valuable energies in totally unproductive quibbles.

For example, it is conceivable that the behavioral approach to instruction is primarily a tool of managers of instruction to be used in planning, organizing, communicating, directing, controlling, and evaluation - functions (HAIMANN and HILGERT, 1972) for developing and supervising the application of instruction.

If the foregoing can be assumed as appropriate, more fruitful types of investigation on the use of P.O.'s might well lead to validation studies of curriculum content resulting from using the tool, of the efficacy of organizing, directing, controlling others in application of the content, and in matching evaluation to the content than to attempt to measure the direct learning results of P.O.'s on learners.

Perhaps, also, a more productive line of investigation would be to find out the efficacy of augmenting the traditional instructional process that does not use performance objectives. Most college students were products of this kind of education. It could be that a new kind of learning methodology would have to be learned and practiced by students over a long period to substantially eliminate previously fixed habit patterns of grasping content.

Another area of investigation that might add significance in the use of performance objectives could be the inclusion of systematic and immediate feedback to each unit of lecture to determine whether the learners had captured the content or essence of the material to be learned. Such feedback should be drawn from the same or similar test items that will be used to evaluate the learners' gains at the end of the quarter.

Investigation should be conducted in the use of P.O.'s as a tri-dimensional study of performance goals. This concept was derived from reviewing LANHAM (1967) research proposal for NOBELS study. Referred to as 'Tridimensional Model for Analyzing Performance Goals' (p. 17), it illustrates the interrelationships of cognitive, psychomotor, and affective dimensions with task performances. An observational investigation should be designed to determine how these three factors interrelate at any given time interval in a teaching-learning situation. Current P.O. studies, including the current investigation, isolate the cognitive for measurement. Perhaps an investigation should combine all the three domains to determine how a performance goal could be jointly constructed to reflect all three domains in any given educational setting.

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SUMMARY

The primary purpose of this study was to determine whether gains in learning from the use of stated performance objectives bolstered by a specific rationale are greater than those gains when performance goals and rationales are omitted.

Two classes of precertification teacher education students were used ($N = 62$). One class had 28 students and the other, 34. All the subjects were entered in both the experimental (P.O.) and control (N.P.O.) treatment variables by using a counterbalanced design. The experiment lasted a total of six weeks; a pre-test was administered on the first week and a post-test the last week. A videotaped lecture on the 'Education of Exceptional Children' was administered within the four intervening weeks. Each week's lecture had a different content.

A Student t 4-t-test analysis was used to determine the significance between the experimental and control treatment variables as indicated by subject gain-scores. Only one of the four weeks' results showed a significant difference at a .05 level in favor of the group that was subjected to the experimental treatment. The remaining three weeks showed no significant differences.

Three of four gain-scores from pre- to post-tests did not reflect a significant difference at the .05 level. Therefore, the null hypothesis was accepted that: at a .05 level of significance, there will be no difference between the gain-scores of the students that used performance objectives and the students that did not use performance objectives.

A more fruitful type of investigation on the use of P.O.'s might well lead to validating studies of curriculum content regarding the efficacy of planning, organizing, directing, controlling instruction and in matching evaluation to the content than to attempt to measure the direct learning results of P.O.'s and non-P.O.'s on learners whose preponderance of earlier learning was in a non-P.O. process.

Other recommendations for further investigation are included.

RÉSUMÉ

Modèle équilibré appliqué à l'étude de l'effet différentiel des objectifs de performance ou de non-performance sur l'apprentissage cognitif.

Le but primordial de cette étude était de déterminer si le gain de l'apprentissage est plus grand si on emploie des objectifs de performance déterminés supportés par une rationnelle spécifique que si on n'emploie pas d'objectifs de performance ni une rationnelle.

Nous avons employé deux classes d'élèves de précertification d'une école pour l'éducation d'enseignants ($N = 62$). Une classe comptait 28 élèves et l'autre, 34. Tous les sujets avaient été introduits aussi bien dans les variables du traitement expérimental (P.O.) que dans les variables du traitement de contrôle (N.P.O.) par l'usage d'un plan bien équilibré. L'expérience a duré

en tout six semaines : un test initial a été exécuté la première semaine et un test final la dernière semaine. Pendant les quatre semaines entre les deux tests, on a donné un cours en video-tape sur « l'Éducation des enfants exceptionnels ». Chaque semaine les cours avaient un contenu différent.

Nous avons employé une analyse du t 4-t-test des élèves. Afin de déterminer la signification entre les variables du traitement expérimental et celles du traitement de contrôle, comme il est indiqué par les chiffres obtenus par les sujets. Un seul résultat, parmi tous ceux des quatre semaines, montrait une différence significative au niveau .05 en faveur du groupe soumis au traitement expérimental. Les trois autres semaines ne montraient aucune différence significative.

Trois des quatre résultats de gain, depuis les pré-tests jusqu'aux post-tests, ne montraient pas de différence significative au niveau .05. Ainsi l'hypothèse zéro a été acceptée : A un niveau .05 de signification il n'y aura pas de différence entre les résultats obtenus par les élèves qui employaient des objectifs de performance et ceux obtenus par les élèves qui n'en employaient pas. Un type de recherche plus fructueux sur l'usage des P.O. pourrait bien mener à valoriser des études sur le contenu du curriculum en ce qui concerne l'efficacité d « planning », l'organisation, la direction, le contrôle de l'instruction et en conformant l'évaluation au contenu, au lieu d'essayer de mesurer les résultats directs du P.O. et du non-P.O. sur des élèves dont le processus d'apprentissage est plutôt un processus de prédominance P.O.

D'autres recommandations pour des investigations ultérieures ont été incluses.

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THE EFFECT OF DIFFERENTIAL EDUCATIONAL STRATEGIES UPON THE ATTITUDES OF FRENCH CANADIAN TEACHERS TOWARD IMMIGRANTS *

by

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BACKGROUND OF THE STUDY

Canadian census figures of the past two decades show that the dramatic decrease of the French speaking population with respect to the English speaking population is to a considerable extent due to the linguistic choice of immigrants in this country. Even in the province of Quebec where French Canadians are the majority group, up to 90 % of all immigrants integrate into the English speaking minority group (see e.g. Commission d'enquête, 1972).

To counteract this trend the province has enacted legislation which forces non English speaking immigrants to send their children to French schools. However, as large segments of the English speaking and immigrant population reject this legislation, less coercitive strategies are also being considered. A change of attitude on the part of French Canadians toward immigrants in the sense of greater tolerance is foremost among these strategies.

Universities, according to the Quebec government sponsored Gendron report (Commission d'enquête, 1972) can play a crucial role in this area. Their task, the report recommends is to design courses

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which aim at promoting greater understanding between French Canadians and immigrants.

Teachers more than any other group should be motivated to take such courses. Prejudicial attitudes on their part could seriously jeopardize the school legislation referred to above and, furthermore, have lasting detrimental effects upon students.

The purpose of this study is to determine the effect of a University course which focuses on immigration upon the attitudes of prospective and practising teachers.

INTRODUCTION

The lack of consistent information on the effects of educational strategies upon attitudes toward minority groups (see ROSE, 1948 ; ALLPORT, 1958 ; WEBSTER, FREEDMAN & HEIST, 1962 ; MCGUIRE, 1969) indicates the need to 1° define the change process in terms of basic differential strategy characteristics 2° identify and control situational factors.

With regard to the first point, it can be pointed out that this study differs from most studies carried out in this area in two major aspects.

The first concerns the collective attitudes of the majority group. In most if not all studies the majority group belongs to a population which follows (or has followed) a normal socio-psychological development i.e. it controls its destiny, experiences a feeling of collective security and is relatively devoid of overt ethnocentrism.

History shows that the population (on which this study draws) i.e. the French Canadians have not been able to follow this development. As a result, they have acquired a high degree of ethnic sensitivity and collective insecurity (DOFNY & RIOUX, 1962 ; RIOUX, 1962 ; WADE, 1968).

Research has demonstrated that self-defensiveness and insecurity when found in individuals produce resistance to change (see e.g. JOHNSON and MATROSS, 1975). When present collectively these characteristics may have a similar effect.

The second difference has to do with instrumental value - a factor which is purported to be highly conducive to attitude change (KATZ and STOTLAND, 1959).

In most strategies attitude change is advocated for social, economic or humanitarian reasons. This strategy, it can be shown, serves all these ends as well as the more basic objective of linguistic survival.

Obviously, these two factors i.e. the collective insecurity of the subjects and the high instrumental value of the changes advocated, will have opposite effects. Our hypothesis is that the instrumental value factor will have a significantly stronger effect than the collective insecurity factor and that as a result of this, attitude change will be significantly positive.

The situational factors to be considered are content, teachers, approach and sex.

Content is usually divided up into one-sided and two-sided versions. In this instance, there may, however, be little value to this approach as most of the information which can be found in responsible literature on either immigration or immigrants is clearly positive in nature.

But content can also be examined from the point of view of its reflection upon the majority group. An effective way of dividing up content from that angle, then, is to contrast realistic content which contains both negative and positive information with content that contains all of the positive and neutral information but none of the negative information.

The superiority of one type of content over another is, of course, difficult to predict in advance. The major disadvantage of realistic content (as opposed to positive or neutral content) is that it arouses a fair amount of aggressiveness. Particularly, when subjects are insecure, as may be the case here. On the other hand, realistic content affords far more insight and vicarious experience than positive or neutral content. Our hypothesis is that realistic content will have a greater positive effect than positive-neutral content.

Teachers is the second situational factor to be taken into account. It is common knowledge that some teachers are more effective than others. The influence of source credibility on communication effectiveness is also well established. It is reasonable, therefore, to assume that teacher effectiveness will relate positively to attitude change.

The third situational factor to be taken into account is approach. In the classroom setting, discussion has been the usual approach. Attitude theory (see BROWN, 1966), however, suggests that this

approach may have limited effects. Firmly rooted prejudice attitudes, it is claimed, change as a result of prior behavior changes rather than as a result of appeal or discussion. Enforced teamwork between members of minority and majority groups provides opportunities for both discussion and behaviour accomodation. It should, therefore, prove superior to discussion.

With regard to sex – the fourth factor to be taken into account, it is hypothesized on the basis of previous research (JANIS & FIELD, 1959) that attitudinal outcome will be significantly more positive with females than with males.

METHOD

Subjects

Prospective and practising teachers following a compulsory introductory course in Educational Sociology at the University of Quebec during the 1974-1975 and 1975-1976 academic years were subjects for the experiment. Twelve classes participated. Subjects had been assigned to these classes at random. The number of subjects per class (losses excluded) varied from 19 to 25. In all groups, there was a fairly even distribution of males and females, and of majors in Elementary and Secondary Education. The final experimental sample comprised 266 subjects (129 males and 137 females). Subjects following a course in Guidance were used for control purposes (N = 30 ; males = 14 and females = 16).

Course Content

The course was organized around topics related to immigrants and immigration. The general outline of the course was as follows :

- I. Academic and socio-cultural problems of minority groups in general.
- II. Cultural, economic and technical contributions of immigrants.
- III. The particular significance of immigration in the province of Quebec.
- IV. Immigration seen through the eyes of French Canadians.
- V. Immigration seen through the eyes of the others (immigrants and New Canadians).
- VI. Survey of strategies designed to promote integration of immigrants.

On the basis of this common outline, two separate contents were elaborated. The realistic content comprised all information, regardless of whether it reflected negatively or positively upon the majority group. The neutral-positive content comprised only that information which did not reflect negatively on the majority group.

While both contents followed the same general plan outlined above, time devoted to each section of the course differed considerably. Section V e.g. which is replete with negative information (i.e. criticisms of Quebec's academic, political and religious institutions, complaints of discriminations...) was dealt with in detail in the realistic content group but only perfunctorily in the neutral - positive content groups. Course materials handed out to the students were adapted to these contents. They consisted of a 50-page course summary written up by the author, a bibliography and a series of articles related to each of the topics under study.

Teachers

The course was given by three teachers who had in the past been rated quite differently. In this experiment, their average performance, as rated by a standardized student questionnaire, was 62, 70 and 83 % respectively (see table 1 for breakdown).

Approach

As indicated in table 1, the discussion method was contrasted with the interethnic teamwork method. In the discussion groups, lecture was limited to 10 minutes with the remaining 50 minutes being used for group discussion. In the teamwork groups, time was divided up in a similar manner: 20 minutes of formal exposé by a team of students on one of the topics defined in the course outline followed by 4 minutes of group discussion. Each team reported on three topics. Ideally, a team consisted of 3 French Canadians and 2 others (immigrants or New Canadians). Some of the latter were present in the course at the outset while others had to be transferred from the discussion groups. The teacher's role was, in essence, that of a moderator. When asked to answer questions or take position, he was to refer to the literature at hand. Under no circumstances, was he to express opinions unfavourable to the immigrants.

Instrument

The preliminary scale (VAN DROMME & RUIMY, 1975) specially designed to measure attitudes of French Canadians toward immigrants was modified to include an approximatively equal number of positive and negative items in the questionnaire. Procedures used to develop the new scale may be summarized as follows. A pool of 150 items were prepared. These items were gathered from a variety of sources, everyday conversations, scientific and popular literature. Items were reviewed (rephrased or discarded) for ambiguity, overlapping and degree of pro and anti content. The questionnaire was then submitted to a pilot group of 100 students. Items who had low discriminatory power were discarded. As finally constituted the scale contained 30 items. 13 of these were of the descriptive type, 12 of the action type. 5 items were labelled unclassified. Items were of the Likert-type with a 5-point response ranging from strongly agree to strongly disagree. The reliability of the scale for the pretest sample based on the Kuder-Richardson formula no. 20 adapted for weighted scores was .91. The correlation between the two subscales for the same sample was .80. Scores were calculated so that they related directly and positively to prejudice. Theoretical scores thus varied from 0 to 120. Pretest means varied from 81.09 to 86.37. These figures indicate that initial attitudes were quite negative.

Administration

Attitude questionnaires were administered at the beginning and at the end of each course. To assure anonymity, students were asked to use codes names rather than their own names. In order to control experimenters' effects, questionnaires were administered by an assistant who was not familiar with the purpose of the research or the hypotheses being tested. In order to control the effect of the experiment itself, it was decided to 1° devote the first two class meetings to a topic that was not specifically related to immigration or immigrants (see course outline) 2° defer the distribution of course materials until the beginning of the third class meeting.

Design and analyses

Teachers, content and approach were organized to allow for a $3 \times 2 \times 2 \times 2$ covariance analysis for unequal cells (WINER, 1962, 599-605). As can be seen from table 1, the factors are teachers (3 levels), content (2 levels), approach (2 levels), sex (2 levels). The significance of each of the experimental treatments with respect to the control condition was determined by means of Newman-Keuls statistics (WINER, 1962, 77-85). Qualitative analyses on different strategy aspects were made from detailed teachers' reports on the students' reactions to the course.

TABLE 1.

Principal elements of the design: groups, teachers, content and approach.

Group	N	Teacher	Teacher performance	Content	Approach
1	25	1	62	1	1
2	23	1	67	1	2
3	21	1	60	2	1
4	23	1	58	2	2
5	22	2	77	1	1
6	24	2	78	1	2
7	22	2	62	2	1
8	20	2	65	2	2
9	21	3	89	1	1
10	24	3	85	1	2
11	22	3	80	2	1
12	19	3	78	2	2
13	30	Control group			

Note: Content 1 = positive-neutral content; content 2 = real content.

Approach 1 = discussion; approach 2 = teamwork.

Results

The equality of the groups was tested for two variables age and precourse attitudes, by means of a one-way analysis of variance. The F values were 0.89 and 1.57 respectively. With 12 and 283 d.f. these values are not significant. Groups may, therefore, assumed to be equivalent.

Postcourse adjusted means (Y') were then determined by means of a one-way analysis of covariance. From table 2 it can be seen that nine of the experimental groups moved in a positive direction with respect to the control group while three moved in a negative direction. Four of these differences are statistically significant. All are in a positive direction.

TABLE 2.

q statistics for differences between postcourse adjusted means (Y') of the experimental groups with respect to the control group.

Group no.	N	Y'	q(k, 282)
10	24	71.84	6.84 **
6	24	71.86	6.83 **
5	22	75.08	5.03 **
9	21	75.84	4.60 *
12	19	77.83	3.49
11	22	78.90	2.88
2	23	78.92	2.87
1	25	81.47	1.45
7	22	83.63	.25
13 (control)	30	84.07	—
3	21	84.16	-.05
4	23	85.40	-.74
8	20	86.33	-1.26

Note: MS error = 70.35 (d.f. 282)

$\bar{n} = 22.5$

The higher the score, the higher the prejudice attitude.

** $p < .01$ * $p < .05$

Next, a factorial covariance was run in order to determine the differential effect of the factors used in the experiment. From table 3 which summarizes these results it can be seen that there is a significant main effect for teachers, content and sex and a significant interaction effect for teachers * content and content * approach.

TABLE 3.
Covariance analysis for attitude measures.

Source of variation	Adjusted S.S.	df	Adjusted M.S.	F Value	P Less Than
Teacher	1,812.58	2	906.29	12.67	0.0001 **
Content	3,149.46	1	3,149.46	44.03	0.0001 **
Approach	37.36	1	37.36	0.52	0.4704
Sex	398.09	1	398.09	5.56	0.0191 *
Teacher * Content	666.37	2	333.18	4.65	0.0104 *
Teacher * Approach	13.81	2	6.90	0.09	0.9075
Teacher * Sex	237.58	2	118.79	1.66	0.1901
Content * Approach	411.29	1	411.29	5.75	0.0172 *
Content * Sex	59.77	1	59.27	0.82	0.3635
Approach * Sex	7.84	1	0.84	0.01	0.9137
Teacher * Content * Approach	14.63	2	7.31	0.10	0.9023
Teacher * Content * Sex	304.33	2	152.16	2.12	0.1191
Teacher * Approach * Sex	7.93	2	3.96	0.05	0.9458
Content * Approach * Sex	14.18	1	14.18	0.19	0.6564
Teacher * Content * Approach * Sex	116.91	2	58.45	0.81	0.5537
Within cell	17,231.97	241	71.50		

* $p < .05$ ** $p < .01$

In order to determine the direction of these effects, Y' means are reproduced in table 4 and examined in terms of different combinations of factors.

TABLE 4.
Y'-means by teachers, content and approach.

	Positive-neutral content		Realistic content	
	discussion	teamwork	discussion	teamwork
Teacher 1	82.26	79.76	84.92	86.18
Teacher 2	75.84	72.61	84.35	87.11
Teacher 3	76.63	72.66	79.65	78.57

The main effect for teachers obviously reflects teacher effectiveness as teachers 1, 2 and 3 have progressively decreasing Y'-means i.e. 83.28, 79.98 and 76.88.

The main effect for content is clearly due to the superior results obtained in the positive-neutral content groups ($Y' = 76.62$) as compared to the realistic content groups ($Y' = 83.46$).

The significant main effect for sex (not indicated in table 4) is in favor of the women. Their Y' is 78.80 as compared to 81.28 for the men.

The interaction effect between teachers and content can be traced back to one of the teachers. Specifically, the difference between the results obtained in the positive-neutral content groups and the equivalent realistic content groups is substantially higher with teacher 2 than with teachers 1 and 3. Average Y' differences are 11.50, 4.54 and 4.46 respectively.

The interaction effect between content and approach can be traced back to the superior results obtained by the three teachers with the teamwork method as compared to the discussion method in the positive-neutral content groups and the inferior results obtained by teachers 1 and 2 with the teamwork method as compared to the discussion method in the realistic content groups.

DISCUSSION AND EVALUATION

A $3 \times 2 \times 2 \times 2$ analysis of covariance was run in order to determine the effect of teachers, content, approach and sex.

With regard to content, it was hypothesized that attitudinal gain would be significantly greater in the realistic content groups than in the positive-neutral content groups. The basis for this hypothesis was the belief that insight and vicarious experience gained through the former type of content would more than offset the backlash effects that would occur as a result of it.

The significant main effect in favor of the positive-neutral content groups indicates that the insight effects were largely overestimated and that the backlash effects were largely underestimated.

More evidence of this appears in the teachers' reports on the students' reactions to the course. According to their analysis, stress and irrational behaviour occurred more frequently and with greater intensity in the realistic content groups than in the positive-neutral content groups.

The generalization suggested by this analysis is that when subjects as a whole are highly self-defensive, realistic content may do more harm than good.

The differential effects obtained with these two types of content raises further questions with respect to the permanency of the changes included. The fact that, in order to be effective, content has to be made positive suggests that the changes produced as a result of it are artificial and, therefore, not very lasting. Conversely, it is not altogether impossible that realistic content (which obviously does not produce immediate results) will have some lasting after-effects.

With regard to teachers it was hypothesized that the more effective teacher would produce more positive changes than the less effective teacher. Results indicate that this hypothesis was valid. Main variance for teachers, though second in importance to content, was significant at the .01 level.

There was also a significant interaction effect between teachers and content. This finding may be interpreted as meaning that some teachers (in this instance, teacher 2) do not live up to normal expectations when stress and irrationality prevail in the classroom (as was the case in the realistic content groups).

With respect to approach, it was hypothesized that enforced inter-ethnic teamwork would prove more effective than discussion. This hypothesis was based on the theory that attitudes change more as a result of behaviour accommodation than as a result of discussion.

Main and interaction variances for approach indicate that this hypothesis is a conditional one: teamwork is superior to discussion in most of the positive-neutral content groups while discussion is superior in all of the realistic content groups.

These findings suggest that some behavior accommodation took place as a result of the teamwork method in the positive-neutral content groups but that very little behaviour accommodation took place in the realistic content groups. Failure for effective communication to take place in the latter groups was attributed by the teachers to heightened self-defensiveness on the part of some majority group members and strong withdrawal tendencies on the part of some minority group members.

The overall effect of the strategy was determined by comparing pretest to posttest change in each of the experimental classes with that

of the control class. The hypothesis was that the high instrumental value of the changes advocated would more than offset the extra resistance which was expected to occur as a result of ethnic sensitivity and collective insecurity.

The significant positive results obtained with five out of twelve groups suggest that there is some value to this hypothesis. On the other hand, the lack of significant positive results obtained with the remaining seven groups indicates that the instrumental value factor was overestimated and the resistance factor underestimated.

Additional evidence of this is found in teachers' reports. Their analysis indicates that a considerable number of students felt that the solution to linguistic survival lies in the use of more rather than less coercitive methods.

Students' reactions, as reported by the teachers, were further analyzed to determine the origin of the expressed prejudice attitudes. It was found that these took root in socio-economic differences and, to a lesser extent, in cultural differences rather than in racial or ethnic differences. A considerable number of comments reflected irrational fear of economic domination and the use of unfair competition practices by immigrants and New Canadians.

In the final analysis, it would appear, then, that, in order for a strategy such as this one, to be effective, the socio-economic position of French Canadians, as perceived by themselves, will have to be considerably improved first.

SUMMARY AND CONCLUSION

This study shows that attitudes of teachers toward immigrants are negative and that courses designed to alter these attitudes have limited and probably not very lasting effects.

These findings suggest that legislation aimed at bringing about assimilation by force may meet with considerable opposition not only from immigrants but from French Canadians themselves.

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SUMMARY

This study investigated the effect of a University course upon the attitudes of practising and prospective French Canadian teachers ($N = 266$) towards immigrants when such variables as teachers, content, approach and sex are controlled. Attitudinal outcome related positively to teacher effectiveness, content and sex. There was also an interaction effect between teachers and content, and between content and approach. When experimental groups were compared to a control group, significant gains appeared in five out of twelve groups. Positive results were attributed to the high instrumental value of the changes advocated. Negative results (which were particularly evident with realistic content) were attributed to the collective insecurity reactions of the subjects used in this study.

RÉSUMÉ

L'effet de stratégies pédagogiques différenciées sur les attitudes d'enseignants canadiens-français envers des immigrants.

La présente étude a pour but de déterminer l'effet d'un cours universitaire centré sur l'immigration sur les attitudes d'enseignants canadiens-français ($N = 266$) envers les immigrants, lorsque des variables telles l'enseignant, le contenu du cours, l'approche et le sexe sont contrôlées.

L'hypothèse selon laquelle des sujets souffrant d'insécurité collective opposent une forte résistance au changement est contrastée avec l'hypothèse selon laquelle une stratégie à haute valeur fonctionnelle peut amener un changement.

Une analyse de covariance factorielle du type $3 \times 2 \times 2 \times 2$ montre que : 1° dans l'ensemble les attitudes ont changé dans une direction positive ; 2° ces changements sont liés positivement à l'efficacité de l'enseignant, au contenu et au sexe ; 3° il existe une interaction entre enseignant et contenu d'une part et entre contenu et approche d'autre part. Lorsque les groupes expérimentaux sont comparés au groupe de contrôle, des changements significativement positifs apparaissent dans cinq groupes sur douze.

Les résultats positifs sont attribués à la haute valeur fonctionnelle des changements d'attitude proposés alors que les résultats négatifs (lesquels sont particulièrement évidents dans les groupes ayant suivi un cours à contenu réaliste) sont attribués aux réactions d'insécurité des sujets utilisés dans cette étude.

Le fait que seuls les cours à contenu positif ou neutre (par opposition aux cours à contenu réaliste) parviennent à changer les attitudes fait supposer que ces changements sont éphémères.

L'ensemble des résultats (les attitudes fortement négatives exprimées au départ, le caractère apparemment artificiel des changements intervenus) autorise à conclure que la loi scolaire actuelle (laquelle oblige les enfants

d'immigrants à fréquenter l'école française et, par le fait même, leur interdit l'accès à l'école anglaise) est prématurée.

LEON VAN DROMME was born in Marshall, Minn. (USA) on March 20, 1933. Degrees: classical humanities (1951) from Ypres College (Belgium); B.A. (1966), M.A. (1969) and Ph. D. (1971) in Education from the University of Montreal. Experience: primary and secondary school teacher (1963-67), lecturer at Ville Marie Teachers College (1967-69), professor of Educational Psychology at the Department of Education, University of Quebec at Montreal, since 1969.

Publications:

- *Les déterminants de l'insatisfaction scolaire. Une étude comparative de divers milieux scolaires.* (EP, Montréal, 1968).
- *Les déterminants de la réussite et de l'échec dans l'enseignement.* (Thèse de doctorat, Université de Montréal, 1971).
- *L'informatique appliquée aux sciences humaines. Théorie et pratique.* (EP, Montréal, 1971).
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CHRONICA *

COMPILED BY — COMPOSÉ PAR
ZUSAMMENGESTELLT VON — SAMENGESTELD DOOR
M.-L. VAN HERREWEGHE

WITH THE CO-OPERATION OF — AVEC LE CONCOURS DE
UNTER MITWIRKUNG VON — MET DE MEDEWERKING VAN
F. VAN BESSEN

* Readers are invited to send information on pedagogical research to the address mentioned below / Les lecteurs sont priés de bien vouloir communiquer leurs projets de recherches etc. à l'adresse suivante / Bitte senden Sie Information über experimental-pädagogische Forschungen an die folgende Anschrift:

Centre for Experimental and Educational Research
Henri Dunantlaan 1
B-9000 GENT (Belgium)

7ème CONGRÈS MONDIAL DE L'ASSOCIATION INTERNATIONALE
DES SCIENCES DE L'ÉDUCATION — Gent, 25-29 juillet 1977

L'Association Internationale des Sciences de l'Éducation vous invite à participer à son 7ème Congrès Mondial qui se tiendra à Gent - Belgique du 25 au 29 juillet 1977.

L'Association organise ses congrès tous les quatre ans afin de permettre aux chercheurs de se rencontrer à des périodes régulières et de discuter de leurs problèmes, de leurs recherches, expériences et résultats dans le domaine des sciences de l'éducation. Mais en même temps, il leur est possible de se fixer en groupe sur des problèmes éducationnels communs, dont les conclusions devraient indéniablement être prises en considération par tous ceux qui exercent des tâches de responsable dans l'éducation des jeunes et dans l'évolution de l'humanité entière vers un destin meilleur.

Comme thème de ce 7ème Congrès a été choisi « *Réalisation de la personnalité par l'éducation* », thème qui sans aucun doute exige des pédagogues à se concentrer sur un des problèmes fondamentaux du développement des richesses humaines et d'une orientation positive pour l'humanité.

Ce thème inclut directement la proposition du 6ème Congrès de l'A.I.S.E. de Paris « l'acte éducationnel », du fait qu'une attention toute particulière sera donnée aux aspects suivants :

- le concept ;
- les objectifs ;
- les conditions ;
- le problème, la recherche, les méthodes ;
- l'éducation permanente.

Le congrès se tient au niveau des professeurs d'université. Uniquement les personnes ayant obtenu le grade de docteur, assumant une tâche d'enseignement ou de recherche dans une université ou un centre de recherche scientifique, sont admis à participer aux sessions plénières, quoique toute personne s'intéressant aux activités de cette assemblée peut être invitée en tant qu'observateur.

Les rapporteurs généraux ont accepté de traiter le thème de leur propre point de vue tout en tenant compte de la conception générale à constater dans l'ensemble des sciences de l'éducation telles qu'elles sont étudiées et pratiquées dans le monde scientifique de leur pays ou de la zone d'influence à délimiter au sens large du terme.

Le premier congrès, organisé à Gent en 1953 par les professeurs Plancke et Verbist et sous la présidence du Professeur J. E. Verheyen, marqua un point de départ pour les rencontres du monde scientifique des sciences de l'éducation et pour une prise à l'étude d'une Association Internationale. Le thème fut plutôt d'ordre exploratif et voulut informer les collègues sur la situation des sciences de l'éducation dans les différentes universités dans un monde d'après guerre en voie de rénovation.

Les congrès de Florence (1957), Oslo (1961), Cambridge (1965), Varsovie (1969) et Paris (1973) ont été à chaque fois des occasions uniques pour la discussion de problèmes fondamentaux et un apport richissime dans l'ensemble des sciences de l'éducation.

Les organisateurs du 7ème Congrès envisagent de pénétrer, grâce au travail antérieur, jusqu'au centre du problème éducationnel, notamment la réalisation de la personnalité par l'éducation et de découvrir les aspects essentiels de « l'acte éducationnel ».

Chaque jour du Congrès comprend une matinée de travail à session plénière, durant laquelle seront présentés des rapports généraux sur le thème, suivant les conceptions propres de chaque pays ou d'un de ses représentants.

Les après-midi seront réservées au travail en commissions, composés suivant des aspects thématiques plus restreints ou spécifiques. Cependant nous envisageons à organiser une après-midi Africaine, Asiatique et Sud-Américaine afin de créer la possibilité pour nos collègues de l'Afrique, de l'Asie et de l'Amérique du Sud de se contacter, de discuter de leurs problèmes propres, de leurs recherches et expériences autour du thème du congrès tels qu'ils se sont présentés et réalisés jusqu'à présent.

Nous estimons qu'un congrès des sciences de l'éducation qui se veut mondial, doit fournir l'occasion d'aller à la recherche des divergences et des ressemblances afin de pouvoir préciser la tâche commune à tous les responsables et signifier dans leur travail commun un point d'appui et orientateur peut-être pour le monde de demain.

Programme du congrès

Lundi, 25 juillet 1977

9.30 h. Session d'ouverture : Introduction du thème général par le Professeur Dr. R. Verbist, Rijksuniversiteit Gent, Belgique, Président d'honneur du Congrès ;

10.45 h. Allocation d'accueil par le Président de l'A.I.S.E., le Professeur Dr. G. Mialaret de l'Université de Caen, France ;

11.15 h. Professeur Dr. Johs. Sandven, Université d'Oslo, Norvège, Président du Conseil de l'A.I.S.E. ;

14.30 h. Travail des comités avec la collaboration de :

Afrique du Sud : Professeur Dr. J. D. Vrey, University of South Africa, Pretoria ;

Autriche : Professeur Dr. R. Olechowski, Universität Wien ;

Belgique : Dr. M. Frydman, Université de l'État à Mons ;

Canada :

- Dr. H. C. Barik, The Ontario Institute for Studies in Education, Toronto ;

- Professeur Dr. M. Roy, Université du Québec à Trois-Rivières ;

Etats Unis d'Amérique :

- Professeur Dr. C. J. Casciano-Savignano, Villanova University, Pennsylvania ;

- Professeur Dr. J. B. Gittler, Yeshiva University, New York ;
- Dr. R. W. Ott, The Pennsylvania State University, University Park ;
- Dr. N. Trowbridge, Grand View College, Des Moines, Iowa ;
- France :
- Professeur Denis, Université de Dijon ;
- Monsieur B. Laville, Saint Martin, Directeur du CERFA, Université du Haut-Rhin, Mulhouse ;
- Professeur Dr. O. Reboul, Université de Strasbourg II ;
- Professeur J. Testanière, Université de Rouen ;
- Italie :
- Dr. L. Bellatalla, Università degli Studi di Pisa ;
- Professeur R. Finazzi Sartor, Università di Padova ;
- République Fédérale Allemande :
- Professeur Dr. H. Frank, Institut für Kybernetische Pädagogik, FEoLL, Paderborn ;
- Turquie : Professeur Dr. F. Varis, Université d'Ankara ;
- Yougoslavie : Professeur Dr. R. Ničković, Université de Belgrade.

Mardi, 26 juillet 1977

- 9.30 h. Professeur Dr. H. Klein, Recteur de la Humboldt Universität, République Démocratique Allemande ;
- 11.00 h. Professeur Dr. G. Mialaret, Université de Caen, France ;
- 14.30 h. Travail des comités :
- Après-midi Africaine
- Professeur Dr. A. S. Mungala, Université de Kisangani, Zaïre ;
- Professeur Dr. A. E. Afigbo, University of Nigeria, Nsukka ;
- Dr. O. N. Agusiobo, University of Nigeria, Nsukka.

Mercredi, 27 juillet 1977

- 9.30 h. Professeur Dr. Wm. Reitz & Professeur Dr. C. Irwin, Wayne State University, Detroit, U.S.A. ;
- 11.00 h. Professeur Dr. H. Schenerl, Hamburg Universität, République Fédérale Allemande ;
- 14.30 h. Travail des comités :
- Après-midi Aziatique
- Professeur Dr. M. H. Jagdale, Shivaji University, Kolhapur, Maharashtra, Inde ;
- Professeur Dr. F. G. Tanchoco, Jr., Manila Central University, Philippines ;
- Monsieur G. R. Sontakey, M.B. Girls School, Balaghat, Inde.

Jeudi, 28 juillet 1977

- 9.30 h. Professeur Dr. B. Suchodolski & Professeur Dr. I. Wojnar, Université de Warszawa, Pologne ;
- 11.00 h. Professeur I. Lister, University of York, Heslington, Grande

Bretagne ;

14.30 h. Travail des comités :

Après-midi Sud-Américaine

- Professeur Dr. *H. Arias Pabon*, Université Libre de Colombie, Bogota ;
- Professeur *A. Pithon Pinto*, Universidade Federal da Bahia, Salvador, Bahia, Brasil.

Vendredi, 29 juillet 1977

9.30 h. Professeur *V. N. Stoletov*, Président de l'Académie des Sciences Pédagogiques de l'U.R.S.S., Moscou ;

11.00 h. Professeur Dr. *L. Desjarlais*, Université d'Ottawa, Ontario, Canada.

15.30 h. Session de clôture.

Ce congrès est placé sous le haut patronage de Sa Majesté le Roi Baudouin de Belgique.

Président de l'Association : Professeur Dr. *G. Mialaret* ;

Président d'honneur du Congrès : Professeur Dr. *R. Verbist* ;

Président du Congrès : Professeur Dr. *M.-L. van Herreweghe*.

Secrétariat général : Rijksuniversiteit Gent, Pedagogisch Laboratorium, Henri Duantlaan 1, B-9000 Gent (Belgique).

**7th WORLD CONGRES OF THE INTERNATIONAL ASSOCIATION
FOR THE ADVANCEMENT OF EDUCATIONAL RESEARCH —
Gent, 25-29 July 1977**

The International Association for the Advancement of Educational Research invites you to participate in the 7th World Congress which will be held in Gent - Belgium, July 25-29, 1977.

The Association organizes its congress every fourth year, in order to permit researchers to meet and discuss on regular intervals their research in the field of education. At the same time, they can meet in plenary sessions to concentrate on common educational problems, the solution of which must be the result of the efforts of the collective body of people fulfilling responsible educational functions in view of the evolution of mankind toward a better destiny.

The Congress theme is *'Self-Realization through Education'*.

It truly is one of the basic problems in the development of human richness and of a more positively oriented world. It implies the resolution of the 6th Congress of the I.A.A.E.R. in Paris 'The educational act' since the congress week will be devoted to the following aspects:

- the concept;
- the aims;
- the conditions;
- the problems, the research, the methods;
- long-life education.

The congress will be held at the level of university professors. Only participants with a doctoral degree and attached to a university or a research centre may participate in the plenary sessions, though other persons interested in the activities of the meeting may be invited as observers.

The rapporteurs have agreed to develop the theme from their own point of view. At the same time, however, since they are considered as representatives of their country (or large sphere of influence) they will take into account the general conceptions which emerge from the totality of educational endeavours in their country.

The first congress was organized in Gent in 1953 by Professor *Plancke* and Professor *Verbist*, under the chairmanship of Professor *J. E. Verheyen*. It put into motion a series of encounters of the forum of educational science and it suggested an exploratory study to work out an International Association. Its theme proposed to inform the colleagues, in the light of renovation, on the situation of educational sciences in different universities of the post war world.

The discussions on fundamental topics on the occasion of the Congresses of Florence (1957), Oslo (1961), Cambridge (1965), Warsaw (1969) and Paris (1973) have always been an opportunity for enriching educational sciences.

Thanks to this preceding support, the 7th Congress aims at penetrating the heart of the educational problem, namely self-realization through education, and at discussing the essentials of the educational act.

During the morning of each congress day, the general reports are presented in plenary sessions.

During the afternoons, more limited and specific thematic aspects, are worked out in committees.

Special arrangements are made to organize an afternoon in which the participants of Africa, Asia and South-America will have the opportunity, to discuss their specific educational problems, their actual research and past experience concerning the theme of the Congress.

A real World Congress must concentrate on divergent and convergent tendencies, before specifying the common point of departure for the common task of those responsible for educational progress in the world of tomorrow.

Program of the congress

Monday, July 25, 1977

9.30 h. Opening of the Congress : Introduction to the Congress theme by Professor Dr. R. Verbist, Rijksuniversiteit Gent, Belgium, Honorary President of the Congress ;

10.45 h. Address of welcome by the President of the I.A.A.E.R., Professor Dr. G. Mialaret, Université de Caen, France ;

11.15 h. Professor Dr. Jobs. Sandven, University of Oslo, Norway, President of the Council of the I.A.A.E.R. ;

14.30 h. Meeting of the committees with the collaboration of :

South Africa : Professor Dr. J. D. Vrey, University of South Africa, Pretoria ;

Austria : Professor Dr. R. Olechowski, Universität Wien ;

Belgium : Dr. M. Frydman, Université de l'État à Mons ;

Canada :

- Dr. H. C. Barik, The Ontario Institute for Studies in Education, Toronto ;

- Professor Dr. M. Roy, Université du Québec à Trois-Rivières ;

U.S.A. :

- Professor Dr. C. J. Casciano-Savignano, Villanova University, Pennsylvania ;

- Professor Dr. J. B. Gittler, Yeshiva University, New York ;

- Dr. R. W. Ott, The Pennsylvania State University, University Park ;

- Dr. N. Trowbridge, Grand View College, Des Moines, Iowa ;

France :

- Professor Denis, Université de Dijon ;

- Mr. B. Laville Saint Martin, Director of CERFA, Université du Haut-Rhin, Mulhouse ;

- Professor Dr. O. Reboul, Université de Strasbourg II ;

- Professor J. Testanière, Université de Rouen ;

Italy :

- Dr. *L. Bellatalla*, Università degli Studi di Pisa ;

- Professor *R. Finazzi*, Sartor, Università di Padova ;

Federal Republic of Germany : Professor Dr. *H. Frank*, Institut für Kybernetische Pädagogik, FEO.L., Paderborn ;

Turkey : Professor Dr. *F. Varis*, University of Ankara ;

Yugoslavia : Professor Dr. *R. Ničković*, University of Belgrado.

Tuesday, July 26, 1977

9.30 h. Professor Dr. *H. Klein*, Rector of the Humboldt Universität, Democratic Republic of Germany ;

11.00 h. Professor Dr. *G. Mialaret*, Université de Caen, France ;

14.30 h. Meeting of the committees :

African afternoon

- Professor Dr. *A. S. Mungala*, University of Kisangani, Zaïre ;

- Professor Dr. *A. E. Afigbo*, University of Nigeria, Nsukka ;

- Dr. *O. N. Agusiobo*, University of Nigeria, Nsukka.

Wednesday, July 27, 1977

9.30 h. Professor Dr. *Wm. Reitz* & Professor Dr. *C. Irwin*, Wayne State University, Detroit, U.S.A. ;

11.00 h. Professor Dr. *H. Scheuerl*, Hamburg Universität, Federal Republic of Germany ;

14.30 h. Meeting of the committees :

Asian afternoon

- Professor Dr. *M. H. Jagdale*, Shivaji University, Kolhapur, Maharashtra, India ;

- Professor Dr. *F. G. Tanchoco, Jr.*, Manila Central University, Philippines ;

- Mr. *G. R. Sontakey*, M.B. Girls School, Balaghat, India.

Thursday, July 28, 1977

9.30 h. Professor Dr. *B. Suchodolski* & Professor Dr. *I. Wojnar*, University of Warsaw, Poland ;

11.00 h. Professor *I. Lister*, University of York, Heslington, Great Britain ;

14.30 h. Meeting of the committees :

South-American afternoon

- Professor Dr. *H. Arias Pabon*, Université Libre de Colombie, Bogota ;

- Professor *A. Pithon Pinto*, Universidade Federal da Bahia, Salvador, Bahia, Brasil.

Friday, July 29, 1977

9.30 h. Professor *V. N. Stoletov*, President of the Academy of Educational Sciences of the U.R.S.S., Moscou ;

11.00 h. Professor Dr. *L. Desjarlais*, University of Ottawa, Ontario, Canada.

15.30 h. Closing of the Congress.

This Congress is placed under the auspices of his Majesty King Baudouin of Belgium.

President of the Association : Professor Dr. *G. Mialaret* ;

Honorary President of the Congress : Professor Dr. *R. Verbist* ;

President of the Congress : Professor Dr. *M.-L. van Herreweghe*.

General Secretariat : Rijksuniversiteit Gent, Pedagogisch Laboratorium, Henri Dunantlaan 1, B-9000 Gent (Belgium).

6ème CONGRÈS DE L'ASSOCIATION INTERNATIONALE DES SCIENCES DE L'ÉDUCATION

Nous tenons à attirer l'attention toute particulière de nos lecteurs sur la publication des actes du 6ème Congrès Mondial des Sciences de l'Éducation (Paris 1973).

Comme thème de ce congrès les organisateurs avaient choisi : « L'apport de sciences fondamentales aux sciences de l'éducation » – « The contribution of fundamental sciences to educational sciences ».

La présidence d'honneur y fut tenu par le Professeur *M. Debesse*, la présidence par le professeur *G. Mialaret*, et le Secrétariat par *Mme Popovics*. Toutes les universités de France étaient représentées dans le Comité d'organisation.

Ces actes sont publiés en deux volumes et contiennent toutes les communications présentées aux Congrès et un compte rendu de toutes les discussions auxquelles elles ont donné lieu.

L'ensemble de ces deux volumes contient une richesse d'idées personnelles, de résultats de recherche et de problèmes nouveaux qui peuvent signifier un riche point de départ dans le travail scientifique de l'éducation.

Données bibliographiques :

VI : Congrès International des Sciences de l'éducation, « L'apport de sciences fondamentales aux sciences de l'éducation » – « The contribution of fundamental sciences to educational sciences », EPI, Tome I, 528 p., Tome II, 528 p., 1976.

6th CONGRESS OF THE INTERNATIONAL ASSOCIATION FOR THE ADVANCEMENT OF EDUCATIONAL RESEARCH

We wish to draw the attention of our readers on the publication of the reports of the 6th World Congress of the International Association for the Advancement of Educational Research (Paris, 1973).

The congress organizers had chosen as a theme: 'L'apport de sciences fondamentales aux sciences de l'éducation' - 'The contribution of fundamental sciences to educational sciences'.

Honorary President of the Congress was Prof. Dr. M. Debesse, President of the Congress was Prof. Dr. G. Midaret, and the secretariat was performed by Mrs. Popovics. All French universities were represented in the Organizing Committee.

The reports are published in two volumes and include all the communications which were presented to the congress and an account of all the discussions issuing from the communications.

These two volumes present a wealth of personal ideas, of research outcomes, and of new problems which might signify a starting point for scientific research in education.

Bibliographical data:

VI: Congrès International des Sciences de l'éducation, 'L'apport de sciences fondamentales aux sciences de l'éducation' - 'The contribution of fundamental sciences to educational sciences', EPI, Vol. I, 528 p., Vol. II, 528 p., 1976.

4. EUROPE

— Issue XI, 1 (1976) of *Paedagogica Europaea*, edited by L. C. G. Malmberg/Westermann, marks a turning point in the development of publication. For ten years it has been sponsored by the Council for Cultural Cooperation of the Council of Europe and the European Cultural Foundation. Professor *Langeveld*, in his valedictory note, traces the history of *Paedagogica Europaea* from its early beginnings to its present established role in the European Yearbook of Education publishing two volumes each year.

Commencing with this issue *Paedagogica Europaea* will be sponsored by the newly established European Institute of Education of the European Cultural Foundation — a generous gesture of support keenly welcomed by the Editorial Board. This new Institution, which is undertaking important initiatives in European educational research and development is described in this issue by *L. Cerych*, its Director. A Senior Staff Member of the Institute, *G. Fragnière*, has been appointed Editor in Chief of *Paedagogica Europaea* and takes up his duties with the preparation of the next volume. Following the retirement of Professor *M. Langeveld*, the present Editor in Chief becomes Chairman of the Editorial Board. There are also changes in the composition of the remainder of the Editorial Board.

The new arrangements offer attractive prospects for *Paedagogica Europaea*. They will allow the Editorial Board to continue to publish the journal as an independent review of European research and development in education and to continue to exercise their unimpeded judgment in the commissioning and acceptance of articles. Yet they will also have privileged access to an important new source of contributions — the research findings of the new European Institute of Education which they will be able to consider alongside all other contributions.

410. GREAT BRITAIN — GRANDE BRETAGNE

— Dr. *J. F. Fulton* has been appointed to the chair of education in the department of educational studies at the Queen's University of Belfast.

— Mr. *Ron Glatter*, reader in the educational administration department of the University of London's Institute of Education, has been appointed to the chair of educational studies at the Open University.

— Prof. *N. MacKenzie*, director of the School of Education and professional fellow of the University of Sussex, has been promoted to a professorship.

— Dr. *Harold Rosen*, reader in education, English department of the London University Institute of Education, has been promoted to the newly established chair of education with special reference to the teaching of English as a mother tongue.

— From *M. Spoelders*, research fellow NFWO-Belgium, attached to the Seminar and Laboratory for experimental, psychological and social education of Gent State University, we received a short note on the 9th International Conference of The International Association of Teachers of English as a Foreign Language (I.A.T.E.F.L.) held at Oxford, Jan. 4-7, 1977. On the occasion of this conference which theme was 'The teaching and learning of English as a language of international communication', he read a paper entitled 'EFL in Belgian elementary schools. Some remarks in the light of a Flemish experiment'. About 80 speakers from all over the world delivered lectures in which the congress theme was discussed from different points of view. This large number of speakers and the limited period of time in which the congress was to take place, obliged the organizer Dr. *W. R. Lee* to have several papers read simultaneously. Nevertheless, there was ample time to discuss the individual papers (about twenty minutes per lecture) and more common aspects in small groups. The latter included 'The preparation of classroom materials for children's EFL courses based on out-of-class project work', 'Course design-specialist English materials for developing skills in language use', 'Finding a regular use for the overhead projector in the teaching of English to young children', 'Constructing multiple-choice reading comprehension questions', and 'Role simulation in English language teaching'. There was an evening devoted to language teaching-films (British Council) and one with performances by the Pimlico Group and the English Teaching Theatre. A book exhibition remained open throughout the conference. After the opening of the conference by Dr. *W. R. Lee*, *G. Hardin* (Fédération Internationale des Professeurs de Langues Vivantes), Dr. *J. Alatis* (T.E.S.O.L. - U.S.A.) and Professor *E. F. Candlin* (Oxford University College of Further Education), a panel discussion by Prof. *Gimson*, Prof. *Quirk* and *R. Close* focused on the future of English as a language of international communication. The summaries of all the lectures and the discussions they provoked are distributed in the Newsletters of English Language Teaching, the Journal of I.A.T.E.F.L. (ed. *W. F. Lee*).

— Edge Hill College of Higher Education is to launch an MA course in reading studies this autumn. It will be designed to give people in the education field a specialized knowledge of language and reading.

The course, to be validated by Lancaster University, will include units in research methodology, language, testing, learning theory, and linguistics. Students will also be able to specialize in a range of options covering reading in multiracial contexts, reading in teacher education, and reading disabilities.

Each student will be asked to prepare a dissertation on his chosen option during the year of the course. These will be compiled to form a small research project.

— Under the supervision of Prof. *E. A. Peel* (University of Birmingham) *A. S. Ghuman* took his doctor's degree with a dissertation on 'A cross-cultural

study of the basic thinking processes of English "British" Punjabi and Indigenous Punjabi boys'.

— The following doctoral theses are in preparation at the University of Durham :

- *M. Everett* : 'The relative importance of factors affecting the motivation of pupils in a secondary comprehensive school' ;
- *A. J. French* : 'Undergraduate problems and counselling services' ;
- *J. Lowe* : 'Moral education in Roman Catholic educational theory and practice'.

— The Centre for the Teaching of Reading, University of Reading has published a 'British Register of Reading Research' to collate information and research on the subject. Details can be obtained from Ms *Betty Root*, tutor in charge, Centre for the Teaching of Reading, Reading University, School of Education, 29 Eastern Avenue, Reading RG1 5TU.

— 'Evaluation Newsletter', produced under the auspices of the Committee for Research into Teacher Education, aims to promote the exchange of ideas and information relating to strategies and procedures for evaluating courses in teacher and higher education. Copies of the introductory issue and information about subscriptions may be obtained from: *Robin Alexander*, Didsbury College of Education, Winslow Road, Manchester M20 8RR, or *Roland Hoste*, Institute of Education, University of Leeds, Leeds LS2 9JT.

411. SCOTLAND — ECOSSE

— Prof. *W. L. Adams*, University of Dundee, informed us on the following doctoral theses in progress :

- *C. Davi* : 'Classroom management — a theoretical and observational study' ;
- *S. Pantelis* : 'Some aspects of the language problem in Greece'.

— The Scottish Council for Research in Education published its forty-eighth annual report 1975-76. The publication offers an overview of reports on projects and grant-aided research and also comprises a list of dissertations presented for degrees in Scottish universities in 1975, out of which we quote the following :

- *Brown, S.* : 'Affective objectives in an integrated science curriculum' (Stirling) ;
- *Coutin, M. T.* : 'The teaching of French in the primary school : a study of in-service training, with special reference to Edinburgh' (Edinburgh) ;
- *Davie, C. A. M.* : 'Classroom management : a theoretical and observational study' (Dundee) ;
- *Delamont, K. S.* : 'Academic conformity observed : studies in the classroom' (Edinburgh) ;

- *Hamilton, D. F.*: 'At classroom level: studies in the learning milieu' (Edinburgh);
- *Hasan, P.*: 'The relevance of cognitive style and motivation to academic and non-academic achievement' (Edinburgh);
- *Holmes, J. M.*: 'Dyslexia: a neurolinguistic study of traumatic and developmental disorders of reading' (Edinburgh);
- *Houston, J. G.*: 'The effects of different verbal teaching styles on attainment in physics of educational objectives in the cognitive and affective domains' (Edinburgh);
- *Nash, R.*: 'Contexts of learning in schools' (Edinburgh);
- *Reid, A. K. P.*: 'Moral education: a study of the implications of some contemporary ethical theories' (Glasgow).

417. IRELAND — IRLANDE

- Under the direction of Prof. Dr. *A. McClelland*, National University of Ireland, Cork, the following doctoral dissertations are being prepared:
- *D. Barry*: 'The place of indigenous languages in the education systems of the former British territories of East and West Africa';
- *Mary P. Barry*: 'The problem of maladjustment as delineated in recent fiction and autobiography, and conflicts in view concerning maladjustments';
- *S. Riordan*: 'The community school in Ireland: a sociological investigation'.

430.1. GERMAN FED. REP. — REP. FÉD. ALLEMANDE

- The first 'All-European Conference for Directors of Education Research Institutions, organised by the Unesco Institute for Education, Hamburg, with the support of the Council of Europe and the Volkswagen foundation, was held 26-29 April 1976 in Hamburg.

Fifty-five directors and leading scientists at research institutes of national importance from 31 European countries participated in this meeting, together with observers from international institutions, representatives of UNESCO (United Nations Educational, Scientific and Cultural Organization), and the Council of Europe.

Under the leading theme of 'The Impact of Educational Research on School Education', the intention of the conference was to give researchers from all European countries, for the first time after the Helsinki Agreement, an opportunity to collect information about existing common research interests, to suggest and reciprocally take up necessary research, and also to improve and continue the communication and international co-operation between the participating institutions.

Three different professional functions at different levels of relevance for each participant were identified in the position paper prepared for the conference: At the first level, in their leading functions, these scientists have to be concerned with the problems of co-ordination of research from a national

perspective, and about their relationship vis à vis the political decision makers ; second, as leaders of an institution, in a managerial capacity, they have to be concerned with content as well as structural planning and the carrying-out of research plans, with all their problems of liaising at various levels with government officials as well as school administrations and schools, and of adequately disseminating their research results ; and, third, they are obviously often involved in research projects themselves. Naturally, these three functions may often be indivisible or interlinked.

Corresponding to this structure a number of scholars submitted papers ; Prof. G. Agoston from Hungary and Prof. S. Marklund from Sweden wrote on the first level ; Prof. A. Yates from the United Kingdom and Prof. R. Wroczyński from the People's Republic of Poland on the second level ; and Prof. I. Kashin from the USSR, Prof. L. Legrand from France, Prof. G. Dietrich from the German Democratic Republic and Prof. G. de Landsheere from Belgium on the third level.

In an exemplary way, these contributions described and analysed problems of importance and significance to all participants.

The enlarged contributions of the conference together with an analysis of the conference in the form of a book, will be published.

(*Newsletter of the Unesco Institute for Education*, No. 4 (June 1976), p. 4.)

— We received the following comments on the third International Congress on Mathematical Education (Karlsruhe 16-21 august 1976) from a Belgian participant, Mrs. G. Plancke-Schuyten, Dr. Math., associate professor at the Seminar and Laboratory for Experimental, Psychological and Social Education of Ghent State University, Belgium (Directors : Prof. Dr. R. Verbist and Prof. Dr. M.-L. van Herreweghe).

The third International Congress on Mathematical Education was held at Karlsruhe, Germany (F.R.G.), from August 16 to August 21, 1976. It was attended by more than 1000 participants from about 70 countries — an indication of the importance and appeal of the congress. The congress was conceived to promote acquaintance with the recent work in the field of mathematical education, to stimulate future developments and to establish and maintain contacts among specialists. It was organized by the International Commission on Mathematical Instruction of the International Mathematical Union and prepared by the International Programme Committee under the guidance of Professor H. G. Steiner and by the Local Organizing Committee under Professor K. Kunle. The first two congresses took place in Lyon (France) and Exeter (Great-Britain).

The third congress attracted a great variety of participants ranging from practitioners (i.e. teachers in Primary and Secondary Schools, Technical Colleges, Universities, and specialists of teacher education, inspectors and administrators) to outstanding researchers in the field of pure mathematics, psychology and education, drawn from universities or foundations from all over the world.

In five plenary sessions, addresses were given by Professor Sir *James Lightbill* (G.B.), Professor *M. F. Atiyah* (G.B.), Professor *P. Hilton* (U.S.A.), Professor *A. Kirsch* (FRG) and Professor *G. Guilbaud* (F). These communications tackled problems such as the interaction between mathematics and society (especially pollution problems), the spread of false dichotomies attached to old and new mathematics education, aspects of simplification in mathematical education and approximations in mathematics.

A panel discussion was held on the theme 'What may in the future computers and calculators mean in mathematical Education'. The sectional meetings were grouped in two (A and B) and met in two sessions. The A-sections, six in number taking place at the same time, dealt with mathematics education at the different age levels i.e. pre-school and primary level (ages 4-12), upper primary and junior high school level (ages 10-16), senior high school (ages 15-20), university level, adult and continuing education, the training and the professional life of mathematics teachers. The B-sections, 7 in number, taking place at the same time dealt with different subjects such as curriculum development, evaluation, goals and objectives, mathematical learning process, educational technology, interaction with other subjects, algorithms and computers.

Each section opened with a survey report, followed by a discussion by the International Advisory Group and by the full body of the sections. Furthermore, some short papers were given in each section, which had been selected by the Programme Committee among the short communications submitted by participants.

All short communications, 184 in number, were presented in the Poster-Sessions. A summary of these communications was displayed on the poster boards. The authors were requested to keep near their poster display on Thursday afternoon in order to discuss their communication with interested Congress participants. Fifteen projects have been invited by the Programme Committee to present their work, among which we mention: IREM (France), IOWO (Netherlands), OU (Great-Britain), SMP (Great-Britain), SMTR (Italy), USMES (USA).

At the same time of the projects four workshops took place: Continuous Workshop of ATM (Great-Britain) for adults and children, Spontaneous Modelling Exercise, Teaching of Elementary Programming Concepts with a Flexible CAT-system, Introduction to Computer Graphics. At the same time as the projects and the workshops ten working groups met. Six of them continued their work from the 2nd ICME congress in Exeter among which 'The psychology of learning mathematics' and four new ones were formed among which 'National and International assessment of mathematical achievement', 'Problem Solving'. Throughout the Congress three countries (G.B., U.S.A., Canada), publishers and firms offered exhibitions of materials for mathematical education.

In the evenings films concerning topics of mathematics education were shown. The working hours of the congress were from 9 to 12 AM and from 2 to 7 PM with performance of films beginning at 8 PM.

New in the organisation of this third congress of ICME were the sections and the poster-sessions. Each section consisted of a panel which should stimulate the discussion after the reporter of the panel had introduced the theme of the section in his paper.

The feeling of the participants was that too much reports ended with a series of questions and too few directions were given for future scientific research. To illustrate the spirit of these papers, I repeat the concluding words of Krygowska (Poland). 'There is a keenly felt need for in depth knowledge of how mathematics is learned... A collection of problems that deserve research on a world-wide cooperative basis should be worked out.' In a discussion I had with some chairmen, they told me the public expected too much from the panel, as the only intention of those panels was to activate and stimulate the participants in the Congress. It was hoped that input from the discussions on the different themes would serve to highlight the aspects of the reports. The idea of the poster-sessions was good, but, being 184 in number, it was impossible for the participants to make a thoughtful choice, notwithstanding they had been assigned to the different sections. My personal feeling was that the Programme Committee should have made a selection among them, to keep an eye on the quality of these posters.

As already mentioned above, the Exeter working group 'The psychology of learning mathematics' met again in Karlsruhe under the chairmanship of Professor Dr. E. Fischbein. The work of this group in Exeter was especially valuable to the application of psycho-pedagogical theory in experimental educational research. My personal feeling is that no much progress has been done since. Since more frequent meetings devoted to this subject would be greatly beneficial, an international study group for the psychology of learning mathematics has now been established with the aim of meeting once a year.

Looking at the projects, the work done by the IREM (Institut de Recherche pour l'Enseignement des Mathématiques) seems promising. School-teachers are taking part in the projects and the researchers are confronted with real class situations.

Although not much progress has been made in the resolution of the problems exposed at the 2nd ICME congress during the four intermediate years, we may distinguish some points which are illustrative for the 3rd ICME congress:

- The reform of the sixties accented new contents, with the goal of raising the comprehension level of each child (ages 4-12) through the reorganisation of instruction according to the main mathematical structures. During the seventies, the emphasis has been more on studying and improving the learning processes of children and on training teachers in new teaching methods.

- The convergence between psychological knowledge about the operative stages of the child and the reorganisation of mathematics into larger structures is the point of departure for the new didactics of mathematics at the elementary level. The didactics of mathematics has to be an independent fundamental discipline with its own objects of study and its own methods.
- Some criticism on the reform of the sixties was formulated (ages 10-16) such as : exaggerated use of set - theoretical frame, premature abstraction and generalization, pedantic use of symbols, overstress of axiomatisation, too much rigour, neglect of physical reality, neglect of spatial intuition replaced by algorithms.
- The programmes are overloaded.
- Crisis in regard to confidence in the diagnostic and prognostic value of tests, as well as opposition to the quantity and the role of examinations.
- Increased emphasis must be placed on affective goals and on demonstrating the usefulness of mathematics.
- The big curriculum projects have not improved mathematics instruction.
- Increase in research work on real classroom situations.
- In the near future the influence of the pocket calculator will be much greater than that of the computer. The pocket calculator is very useful in the design and analysis of algorithms.

Although so many problems were discussed at this Congress, all participants felt the need of more detailed experimental research, especially on a broad international scale, and of more profound theoretical studies which may result in a better understanding of the various aspects of mathematical education. The general feeling was that in between the different Congresses, more informal contacts among researchers in this broad scientific field, would be most fruitful in this respect.

G. Plancke-Schuyten

- Die Arbeitsgemeinschaft für empirisch-pädagogische Forschung (AEPF) - eine Sektion der Deutschen Gesellschaft für Erziehungswissenschaft - hatte als Thema für ihre 20. Tagung die empirisch-methodische Ausbildung von Hauptfachpädagogen gewählt. Die Referatentaten, die auf jener Tagung gehalten wurden, wurden im Augustheft von „Bildung und Erziehung“ aufgenommen. Es handelt sich um :
- *D. W. Busch* : „Einige Überlegungen zu Stellenwert, Zielen und didaktischer Konzeption einer berufsfeldbezogenen sozialwissenschaftlichen Methodenausbildung für Diplompädagogen“ ;
- *J. Mareiner* : „Der Ort der empirisch-methodischen Ausbildung im Professionalisierungsprozess des Schulpädagogen“ ;
- *W. Wolf* : „Entwurf eines Empirie- und Statistikcurriculums für Hauptfachstudenten im Fach Erziehungswissenschaft“ ;
- *G. A. Straka* : „Aufbau der Empirieausbildung für Studenten der Abschlüsse Diplom, Magister oder Staatsexamen Pädagogik“ ;

- P. Nenninger und G. A. Straka: „Zum geplanten Einsatz von Computer-unterstütztem Unterricht im Rahmen der Empirieausbildung für Studenten der Abschlüsse Diplom, Magister oder Staatsexamen Pädagogik“;
- G. Glück: „Plädoyer für ein Situationsgebundenes Lernen empirischer Methoden im Pädagogikstudium“.

(*Bildung und Erziehung*, 29, 4 (Aug. 1976).)

— The first partial volume (text part A - L) of the 'Pädagogischer Jahresbericht 1975' has just appeared. This series reports annually on 18,00 periodical essays, contributions to anthologies and monographs originating in the German language area (Federal Republic of Germany, German Democratic Republic, Austria, Switzerland). The publisher's address is: Verlag für Pädagogische Dokumentation Eidsens, Postfach 13-0303, D-4100 Duisburg 13, W. Germany).

— Unter der Leitung des Prof. Dr. Hermann Röhrs, Ruprecht-Karl-Universität Heidelberg, wurden die folgenden Dissertationen vollendet:

- P. Billich: „Die pädagogische Relevanz einer audiovisuellen Sprachaudiometrie für Kinder“;
- J. Dörr: „Die Erziehung des geistigbehinderten Kindes unter besonderer Berücksichtigung der Förderung der auditiven Wahrnehmung“;
- A. Gösele: „Probleme der Sprachenfolge“;
- M. Jost: „Die Gruppierungspraxis in der Grundschule“;
- A. Ottman: „Die Funktion der Mathematik im Rahmen der Sprachbildung“;
- E. Otto: „Grundlagen und Paradigmen einer interdependenten Didaktik des elementaren Sprach- und Mathematikunterrichtes“;
- Renner: „Erziehungs- und Sozialisationsbedingungen türkischer Kinder. Vergleich zwischen Deutschland und Türkei“ (veröffentlicht 1975);
- Schindele: „Behinderte Kinder in verschiedenen Unterrichts- und Erziehungsprogrammen“ (veröffentlicht 1973);
- J. Schirmer: „Zum Problem der Früherkennung und Frühförderung lernbehinderter Kinder“;
- L. Werner: „Das sprachgeschädigte Kind in der Vorschulernerziehung“ (veröffentlicht 1973).

— Prof. Dr. Gudrun Schiek, Erziehungswissenschaftliches Institut der Freien Universität Berlin, sand uns eine Liste der Dissertationen, die in den Jahren 1974 bis 1976 angefertigt wurden:

- G. Althaus: „Die Negative Pädagogik in der Kritischen Theorie Adornos“;
- N. Flammann: „Gestaltung und Einsatz bildlicher Darstellungen“;
- H. L. Freese: „Schulleistungsrelevante Merkmale der häuslichen Erziehungsumwelt von Jungen und Mädchen der 7. Klasse des Gymnasiums“;
- K. J. Gutsche: „Zur gegenwärtigen Problematik der Sportpädagogik. Versuch einer Standortbestimmung“;
- P. Kläss: „Schulsport und Schülereinstellungen“;

- *H. Kroll* : „Berufserziehung als politische Sozialisation - Realität u. didaktische Alternativen“ ;
- *F. Sang* : „Schulleistung und Elternreaktionen. Bedingungen und Konsequenzen Leistung erklärender Attributionen“ ;
- *H. Schramm* : „Entwicklung eines Konzepts für ein schulpädagogisches Unterrichtsprojekt. Ein Beitrag zur hochschuldidaktischen Diskussion der Lehrerbildung“.

— *C. Friede* promovierte an der Technischen Hochschule Aachen mit „Motive bei der Studien- und Berufswahl des Lehramtes an Grund- und Hauptschulen“ unter der Leitung von Prof. Dr. J. Zielinski.

— Unter der Leitung von Prof. Dr. *E. Hoehn*, Universität Mannheim, bereitet *W. R...* Dissertation vor über „Formen und Realisierung des Computerunterstützten Unterrichts in der beruflichen Erwachsenenbildung“.

436. AUSTRIA — AUTRICHE

— Prof. Dr. *Marian Heitger*, Institut für Pädagogik der Universität Wien, sand uns die folgende Liste von Dissertationsschriften :

- *H. Lischke* : „Pädagogische Probleme bei teilleistungsgestörten Kindern“ ;
- *R. Müller* : „Die Beziehung zum eigenen Körper als Bildungsaufgabe : Ihre Sicht und Darstellung in Lehrbüchern des Biologieunterrichts“ ;
- *W. Stark* : „Bereitet die Pflichtschule auf das Berufsleben vor ?“ ;
- *M. Winter* : „Die Psychoanalyse in ihrem Verhältnis zur Pädagogik“.

437. CZECHOSLOVAKIA — TCHÉCOSLOVAQUIE

— At the Pedagogical Faculty of Charles University, Prague, the following doctoral dissertations were finished.

- *H. Malá* : 'Problematics of contemporary development and education of gipsy population and anthropological study of gipsy school children in eastern Bohemia' ;
- *J. Volný* : 'Some pedagogical and psychological questions of traffic security education at 1-9 school year'.

438. POLAND — POLOGNE

— Prof. Dr. *A. Hulek*, Pedagogical Institute of the University of Warszawa, informed us on doctoral dissertations submitted in 1975 :

- *G. Demel* : 'The attempt to improve speech therapy services in view of the needs of school children with speech disturbances' ;
- *J. Gajda* : 'The influence of directed reception of television program on formation of literary culture of pupils in secondary vocational schools' ;

- J. Izdebska: 'The influence of reading habits on increase of social knowledge with 9-10 years old children';
- R. Kończyk: 'Social factors and conditions in adaptation process of young teachers to their roles';
- J. Kowalczyk: 'Automation and changes in contents and organization of training, professions and employment';
- H. Kwiatkowska: 'The functions of literary experiences in formation of moral attitudes of pupils';
- T. Mróz: 'The effect of problem-laboratory methods in teaching of sciences';
- S. Nowaczyk: 'Training of tutors for children's care institutions - developments, problems and tendencies';
- L. Orlicka: 'The concept of creative mind in theory of education';
- S. Szmagański: 'Reading habits as factor promotion of young generation in rural districts';
- Z. Wolańska: 'Selection of patterns and tasks as one of the means in development of children's creative mathematical thinking'.

— Sous la direction du Prof. J. Lepalczyk de l'Institut Pédagogique à l'Université de Łódź, Z. Porczyńska prépare une dissertation doctorale intitulée 'Postawy społeczne i moralne uczniów w świetle recepcji wybranych lektur szkolnych (Attitudes sociales et morales des élèves à la base de réception des lectures scolaires choisies).

439. HUNGARY — HONGRIE

— The Kodály Institute for Music Pedagogy was opened in September 1975.

The Institute is located in Kecskemét, Kodály's home town, in a restored Franciscan monastery. It is an institution of higher education and a centre for the postgraduate training of music teachers. A ten-month course is open to foreign teachers (35 every year) who are accommodated in the building. Shorter courses are also held in the summer months for foreign and Hungarian music teachers. Languages of instruction are Hungarian and English. The curriculum comprises the following subjects: methodology, theory of music, choir leading, score reading, Hungarian language, and music psychology. Enrolment in the first year included students from Canada, the United States, Norway, Denmark, France and Japan.

44. FRANCE

— The International Association for Educational Assessment, an association of measurement organizations in various countries met at UNESCO, Paris, May 24-28, 1976. The theme of the meeting was 'Admission to Higher Education: Problems, Innovations and Research Design for Future Studies.'

A meeting has been scheduled for May, 1977 to consider issues in examinations at the end of secondary school. It will be held in Nairobi, Kenya.

— Du 8 au 11 juin 1976 s'est tenue au Siège de l'Unesco, la deuxième réunion du groupe de consultants sur les « Finalités et théories de l'éducation », qu'organisaient conjointement la division de la philosophie et le Bureau international d'éducation. Le but de cette rencontre était de reprendre, élargir et approfondir la discussion sur ce thème et de tracer les grandes lignes d'un programme à moyen terme. Trois études sur l'état du problème en Afrique, en Amérique latine et en URSS ont été présentées, ainsi qu'une quatrième traitant des finalités de l'éducation par rapport à la formation des enseignants. Les participants ont examiné en outre un projet d'histoire universelle de l'éducation centrée sur les finalités.

Un accord général s'est fait jour sur l'importance accrue des finalités dans les différents systèmes éducatifs en raison des profondes et rapides transformations économiques, sociales et culturelles du monde actuel. De plus le consensus s'est établi quant à la distinction entre finalités et objectifs de l'éducation : celles-là étant étroitement liées à la conception générale de l'homme ainsi qu'aux idéaux et valeurs d'une société donnée, tandis que ceux-ci relèvent de la politique éducative, c'est-à-dire d'un système de dispositifs concrets et changeants visant à atteindre, dans des conditions spécifiques, les finalités fondamentales.

En raison des finalités différentes, voire contradictoires, qui existent dans le monde, la réunion a souligné la nécessité, dans la perspective propre de l'Unesco, de découvrir et de déterminer des finalités universelles qui soient à la base même de l'unité spirituelle de l'humanité. La pluralité des stratégies et des moyens doit donc tenir compte de la spécificité des situations, tout en s'inspirant des impératifs d'une solidarité mondiale, surtout en vue de l'instauration d'un nouvel ordre économique et social.

Les participants ont unanimement recommandé que l'Unesco continue d'organiser et d'encourager, tant au plan national que régional et international, des études comparatives et interdisciplinaires sur les finalités de l'éducation dans leurs perspectives historique et actuelle. Certains thèmes ont été suggérés comme prioritaires, tels que : finalités implicites et explicites de l'éducation ; finalités sur lesquelles se fonde l'éducation de la paix ; contribution de l'Unesco à l'élaboration d'une dimension internationale de l'éducation fondée sur certaines conceptions de l'homme moderne ; dialectique des finalités de l'éducation et de la politique culturelle et éducative ; finalités de l'éducation entre tradition et modernité, etc.

(*Chronique de l'Unesco*, Vol. XXII, no. 7-8 (1976), pp. 219-220).

— Un séminaire a été organisé récemment à l'IIPE sur les « Stratégies pédagogiques et la planification de l'éducation » dans le but, d'une part, d'examiner de quelle manière il était possible de planifier de façon systématique l'amélioration de la qualité de l'apprentissage scolaire et, d'autre part, d'en tirer des conséquences pour le perfectionnement des techniques de planification et de formation des planificateurs.

Ce stage d'étude, auquel ont participé les directeurs généraux (ou leurs représentants) et les fonctionnaires des services de recherche en matière d'éducation de la République Fédérale d'Allemagne, de la République Arabe, d'Egypte, de la République du Ghana, de la Hongrie, de la Malaisie, de la Nouvelle-Zélande, de la Tanzanie et du Venezuela, s'est déroulé du 8 au 12 mars 1976. Six monographies relatives à des essais de perfectionnement des stratégies pédagogiques y ont été examinées : le KEDI Instructional System de la République de Corée, le Development School Project d'Indonésie, le Three Phase Science Project in Papua de Nouvelle-Guinée, le Science Education Programme en Afrique, le NICI Project d'Israël et le Progress in Learning Project du Royaume-Uni.

L'IIPE est en train de préparer une monographie sur diverses méthodes possibles de perfectionnement de la planification systématique de la qualité de l'éducation. Il est vraisemblable que plusieurs pays vont en profiter pour procéder à une enquête détaillée sur la manière dont évoluent avec le temps les techniques de mise au point, d'essai et de mise en œuvre des tentatives de réforme des stratégies pédagogiques dans un projet particulier.

(*Bulletin de l'Institut International de Planification de l'Education* (Unesco), no. 1 (Sept. 1976), p. 2.)

- A l'Université de Caen, les thèses de doctorats suivantes sont en cours :
 - *H. L. Agbodjan* : « L'attitude des élèves Togolais vis-à-vis de l'enseignement français du 2^{ème} degré » ; promoteur : Prof. G. Mialaret ;
 - *D. Corruble* : « Le mouvement mécanique, facteur du développement intellectuel » ; promoteur : Prof. G. Mialaret ;
 - *P. F. Dargelos* : « Recherche pour l'élaboration d'une méthodologie d'analyse des manuels visant à l'apprentissage de la lecture » ; promoteur : Prof. G. Mialaret ;
 - *M. Frappier* : « Essai d'une analyse scientifique de manuels littéraires en usage dans le second degré du point de vue de leurs fonctionnements et des attitudes qu'ils induisent » ; promoteur : Prof. J. Vial ;
 - *M. Guillot* : « Evaluation du changement de comportement pédagogique des maîtres » ; promoteur : Prof. G. Mialaret ;
 - *A. Guillotte* : « Étude expérimentale de certaines variables liées à la rapidité des acquisitions, au cours des premières approches perspectives de textes écrits, par des enfants qui n'ont pas encore appris à lire » ; promoteur : Prof. G. Mialaret ;
 - *J. Hallak* : « Pour une politique éducative : La carte scolaire » ; promoteur : Prof. G. Mialaret ;
 - *A. R. Jaafar* : « Réaction des éducateurs algériens à l'introduction des mathématiques modernes. Conséquences en ce qui concerne leur formation » ; promoteur : Prof. G. Mialaret ;
 - *J.-P. Laffaiteur* : « Contribution à l'étude des processus psychologiques impliqués dans l'acquisition de la langue écrite par l'enfant de 6 ans » ; promoteur : Prof. G. Mialaret ;

- *J. Le Gal* : « Comparaison de l'efficacité de techniques d'apprentissage de l'orthographe des mots du langage usuel d'enfants de classe de perfectionnement » ; promoteur : Prof. *J. Vial* ;
- *L. Morin* : « Créativité, erreur et pédagogie » ; promoteur : Prof. *J. Vial* ;
- *M. Moscato* : « Performance linguistique et activités cognitives » ; promoteur : Prof. *G. Mialaret* ;
- *R. Rodriguez Herrera* : « Les problèmes posés par l'enseignement des mathématiques » ; Promoteur : Prof. *G. Mialaret*.

— Le Prof. Dr. *G. Avanzani* nous fait parvenir la liste de thèses de doctorat en cours à l'université de Lyon :

- *P. Arnaud* : « Contribution à l'étude de l'éducation motrice chez des élèves du 1er cycle du second degré » ;
- *M. Bernard* : « Les modèles de formation des adultes » ;
- *R. Chabrier* : « Sens et fonctions de l'enseignement primaire supérieur » ;
- *F. Daban* : « L'apprentissage du français comme l'un des facteurs de démocratisation (niveau maternelle et élémentaire) » ;
- *M. De Maistre* : « Étude expérimentale de l'aptitude à la lecture » ;
- *J. Dikundukila* : « La croissance démographique et les besoins en éducation au Zaïre » ;
- *P. Garnier* : « Sens et fonction de l'Inspection primaire » ;
- *J. D. Groleau* : « Étude comparative de la méthode de l'enseignement de la mathématique au Canada et en France » ;
- *J. Guion* : « Contribution à l'étude de l'apprentissage de la lecture » ;
- *G. Laprevote* : « Problèmes de la formation des maîtres de l'école élémentaire » ;
- *J. Levy* : « L'enseignement des langues dans les Écoles d'Ingénieurs » ;
- *M. Marcon* : « Finalités et fonctions de l'enseignement technique » ;
- *A. Matrat* : « Contribution à une typologie des professeurs de philosophie » ;
- *J. Minani* : « Le système scolaire suédois » ;
- *C. Mordacq* : « Modalités de formation et techniques d'évaluation dans les écoles d'infirmières » ;
- *M.-O. Morel* : « Place de l'enseignement par correspondance dans la formation des adultes » ;
- *L. Pilorge* : « Les facteurs du changement de la didactique de la langue anglaise » ;
- *J. Priouret* : « Sens et formation des manuels scolaires » ;
- *E. Rebhen* : « Contribution à l'étude de la didactique de la langue allemande » ;
- *H. Rebhen* : « Contribution à l'étude de l'apprentissage du langage oral et écrit chez les enfants de 5 à 7 ans. »
- *B. Wagner* : « Réflexions sur l'enseignement de l'Histoire ».

— Nous avons reçu le deuxième volume d'« Informations bibliographiques en sciences de l'éducation », publié par l'Institut National de Recherche et de Documentation Pédagogique.

— Le « Bulletin de l'IIPE » est une nouvelle publication trimestrielle gratuite de l'Institut International de Planification de l'Éducation (Unesco), 7-9, rue Eugène-Delacroix, 75016 Paris. Nous citons *Hans N. Weiler*, directeur de l'IIPE : « Le modeste Bulletin que voici a été créé par l'IIPE pour servir à l'Institut de moyen de communication avec le nombre grandissant de ses amis et collaborateurs de par le monde, et avec tous ceux également qui pourraient porter intérêt à ses activités. Notre espoir est qu'il puisse rendre service tout particulièrement à ceux qui ont été mêlés de très près ces dix dernières années aux travaux de l'Institut — soit comme membres de son personnel, soit comme collaborateurs à l'un de ses projets de recherche, soit encore comme participants à l'un des programmes de stage que l'Institut a organisé. Il nous plairait de penser que ce Bulletin puisse constituer le canal par lequel pourrait s'engager un dialogue professionnel entre tous ceux qui par le passé ont été associés d'une manière ou d'une autre aux travaux de l'IIPE. »

Le mieux serait, croyons-nous, que ce genre de contact puisse s'instituer dans les deux sens : de même que le Bulletin tenterait de tenir ses lecteurs informés des travaux importants et des grands événements en matière de planification de l'éducation à l'IIPE et ailleurs, de même ses pages pourraient-elles devenir le forum où les lecteurs qui le désireraient pourraient faire part, à l'Institut et à leurs collègues, de leurs expériences, de leurs idées et de leurs intuitions sur les problèmes de planification éducative. »

— Le « Bulletin Signalétique » est une revue trimestrielle publiée par le « Centre de Documentation Sciences Humaines ».

Créé en 1947 par le Centre de Documentation du C.N.R.S. (Centre National de la Recherche Scientifique), le Bulletin signalétique « Sciences Humaines » est un outil bibliographique destiné aux chercheurs, aux étudiants et aux spécialistes. Les références, accompagnées le plus souvent de courtes analyses, portent sur l'essentiel des documents traitant de sciences humaines et parus dans le monde entier : périodiques, actes de congrès et de colloques, volumes de mélanges, rapports et occasionnellement ouvrages.

Cette publication couvre les domaines suivants : philosophie, sciences de l'éducation, sociologie-ethnologie, histoire des sciences et des techniques, histoire et sciences de la littérature, sciences du langage, préhistoire, art et archéologie, sciences religieuses, science administrative.

Chaque discipline fait l'objet de fascicules paraissant tous les trimestres ; en fin d'année un supplément intitulé « Tables annuelles » récapitule les index des auteurs, des concepts et des revues.

— Un nouveau catalogue des publications et documents de l'IIPE (Institut International de Planification de l'Éducation, Unesco) vient de paraître. Il est disponible à l'Institut où il peut être obtenu sur simple demande.

Le catalogue comprend, regroupés par catégories de sujets, plus de 400 titres d'ouvrages publiés par l'IIPE sous forme de rapports de recherche, monographies, documents de séminaires, matériels de formation, cahiers de l'IIPE et ouvrages de référence.

Parmi les sujets enregistrés dans ce catalogue, citons : l'économie de l'éducation, son coût et son financement ; la mise au point et l'évaluation des programmes d'enseignement ; la main-d'œuvre et l'emploi ; l'administration et la gestion ; l'enseignement extra-scolaire et l'enseignement rural.

(*Bulletin de l'IHPE*, no. 1 (Sept. 1976), p. 2.)

480. FINLAND — FINLANDE

— At the university of Jyväskylä the following doctoral dissertations are in progress :

- *J. Ekola* : 'The characteristics of textbooks in elementary school' ;
- *S. Hirsjärvi* : 'Finnish parents' assumptions about the nature of man' ;
- *E. Laine* : 'Foreign language learning motivation in Finland'.

492. NETHERLANDS — PAYS-BAS

— Under the direction of Prof. Dr. *L. de Klerk*, State University of Leiden, *Marijke Groenveld-van Duin* took her doctoral degree with a dissertation on 'Motivation and Academic Achievement in Sixth-Graders'.

493. BELGIUM — BELGIQUE

— Le nouveau numéro des « Communications » de l'Association Internationale des Sciences de l'Éducation (Président : Prof. *G. Mialaret*, Université de Caen, France) vient de paraître. Le numéro XIII est édité par Prof. Dr. *M.-L. van Herrewege* (Secrétaire-Général de l'Association, Directeur du Séminaire de Pédagogie Expérimentale, Psychologique et Sociale, Université de l'État à Gand).

— On November 25 and 26, 1976 the Seminar and Laboratory for Experimental, Psychological and Social Education of Gent State University organized a small conference in cooperation with the Belgian Association of Applied Linguistics (Association Belge de Linguistique Appliquée – Belgische Vereniging voor Toegepaste Linguïstiek). The conference theme was : 'La recherche psycholinguistique en Belgique. Implications et perspectives pédagogiques'.

Invited speakers explored the domain in their fourteen lectures altogether. The papers, the titles which can be found below, will be published in the proceedings of this colloquy.

- 'Inleiding : pedagogische psycholinguïstiek ?' (Introduction : educational psycholinguistics ?), *M. Spoelders* – Gent University ;
- 'Nederlandse baby-talk' (Flemish-Netherlandic baby-talk), *L. Beheydt* – Catholic University Leuven, K.U.L. ;
- 'Le développement du langage chez les retardés mentaux : retard de développement ou déficit spécifique ?', *J. Rondal* – Université de Liège ;

- 'Een onderzoek naar de aanvankelijke taalontwikkeling van twee Nederlandstalige kinderen' (An investigation of the beginning language development of two Flemish-Netherlandic speaking children), *F. Van Besien* - Gent University ;
- 'Een test voor de grammaticale competentie van kleuters' (A grammatical-competence-test for toddlers), *P. Van Geert* - Gent and Groningen Universities ;
- 'L'exploration de la sémantique subjective des lexèmes et son intérêt pour l'enseignement de la langue ; illustration pour une recherche sur les déterminants du nom', *J. Costermans* - Université Catholique de Louvain ;
- 'La méthode de la réflexion parlée dans les recherches psycholinguistiques et psychopédagogiques. Perspectives d'application à la pratique pédagogique', *L. Paquay* - Université Catholique de Louvain ;
- 'Markeringstheorie. Een empirisch onderzoek bij 2;6 en 5;0-jarige kinderen' (Theory of markedness. An empirical investigation with children of 2;6 and 5;0 years), *F. Daems* - University of Antwerp - U.I.A. and U.F.S.I.A. ;
- 'De structuur van het geheugen : een onderzoek naar de individuele organisatieprincipes bij leerlingen van de basisschool' (The structure of memory : an investigation into the individual principles of organisation in primary school pupils), *M. Goyvaerts* - University of Antwerp, U.I.A. ;
- 'Subordinate clauses in English and universals in foreign language learning processes', *R. De Bleser* - Catholic University of Leuven, K.U.L. ;
- 'A la recherche d'une méthode pour approcher la compréhension du langage chez l'enfant', *M.-L. Moreau* - Université de Mons ;
- 'Enkele onderwijskundige implicaties i.v.m. het matrix-begrip van Pike' (Some educational implications of Pike's matrix-concept), *G. De Corte* - University of Antwerp - U.I.A. ;
- 'Indicaties voor de constructie van grammaticatieleerboeken op quasi-algoritmische basis' (Indications for the construction of grammar handbooks on a quasi-algorithmic basis), *S. Maes* - University of Antwerp - U.I.A. ;
- 'Enkele raakpunten tussen cognitieve sociale psychologie en psycholinguïstiek' (Points of contact between cognitive social psychology and psycholinguistics), *G. Peeters* - Catholic University of Louvain, K.U.L.

— From *M. Spoelders*, research fellow NFWO attached to the Seminar and Laboratory of Experimental, Psychological and Social Education, (State Univ. of Gent), we received a comment upon one of the recent outcomes of the research-project of the Instituut voor Toegepaste Linguïstiek (Catholic Univ. Leuven, Dir. Prof. Dr. *L. K. Engels*) on foreign-language teaching methodology, namely *The Magic Key. Round I* (Plantyn, Deurne-Antwerp, Belgium 1975). It will bring to the reader the results of a research-work from about 10 years collaboration in the Centre about the topic.

It is certainly not everyday that an exhaustive teaching-learning package of English lands on one's desk. In the special event that the reviewer has been able to follow the period of incubation, he feels, at the same time, and to a

not insignificant degree, spiritually akin with the objectives of the authors and, more important, 'materially' interested in a practical course of English for beginners. At least insofar as the early years are concerned, this *Living English of the New Generation* has undoubtedly superceded the experimental phase and comes assuredly forward to occupy the place of its predecessor among non-continental teaching-learning devices of English as a Foreign Language (EFL) which have most recently sought to gain citizenship. One thinks of L. G. Alexander's integrated English course, *Look, Listen and Learn* (Longman), the more recent audio-visual course, *Target* (Longman), from the hand of this same author in collaboration with J. Tadman, as well as the new – as far as publication date is concerned – *Kaleidoscope* (Mac Millan Education) which was launched by a workgroup from the University of York under the supervision of E. W. Hawkins. Though the first and last are rather intended for younger beginners, all three in large part bear a resemblance to *The Magic Key* in matters of form. The major difference, then, is not in this regard but in reference to the *didactic operationalization and optimalization of a scientifically formulated and tested idea* which involves the objectives and the substance of the learning of foreign languages in general and the learning of English by Dutch speaking students in particular. These two aspects, form and content, will be investigated further.

In matters of form, *The Magic Key* is a teaching-learning package. Certain colleagues today will perhaps brood aloud, 'Where is the FL book of yesterday?' To be sure, the period in which a textbook of English signified the unique though restricted output of individual effort belongs, perhaps permanently, to the past. *The Magic Key* is the product of a small, autonomous workgroup of educational practitioners and theoreticians and of qualified educational and professional specialists. As one suspects but probably realizes all too seldom, this group has, for a long time, worked, revised, experimented, and tested until an instrument which was scientifically justifiable in an applied linguistic and didactic sense could arise from the desks of the authors and their guinea pig students – the intention being that still other teachers and students would benefit from a key to fluency in English. These two participants, teachers and students, find in such a package various types of software with which at every moment the use of hardware can be coordinated. The entire work is conceived on a number of *Rounds* which correspond practically to the year of study. *Round I* consists of ten *Steps* which have been extracted and refined from English syntax as a pedagogical 'doing' grammar which offers an initial grip on the English language and its active and receptive usage. In the remaining *Rounds* this division is retained, notwithstanding the necessary, concentric variations per theme or *Step*. Each *Step* is further subdivided into teaching-learning categories or *Units*.

In summary, a programmed internal structure, an integrated presentation of software and hardware, and special provisions for *Lehr- & Lerninstanz* are inherent in a teaching-learning package. In speaking of *The Magic Key: Round I*, this last provision comprises a text and exercise book for students,

a handbook for teachers, wall charts, corresponding reproductions in textbook format, and recorded tapes. The layout is sober and modern.

It is with the composition of the course and its necessarily related *methodical thread* and *didactic prescriptions*, as already suggested above, where the essence of the innovation in *The Magic Key* digresses, in my opinion, from various other courses. This course represents a successful attempt to apply in a creative way the recent attainments and insights of a number of disciplines to the EFL teaching-learning process: sociolinguistics, psycholinguistics, educational psychology, and others. The didactics of foreign language has, in the last ten years, certainly profited from the more cognitively inclined trends in educational psychology and other disciplines. It is often so that the inertia inherent in teaching techniques and learning processes can more effectively counteract those theoretical standpoints from which future implications for actual educational practice have been formulated but with which no original research addressed to action has been coordinated. It is to the great credit of the authors that they have dared to assume the *double task* of *theoretical rejuvenation with the application of new sources and experimental testing in practice* and that they have continued trying to realize these two tasks in a dynamic way. This is not the place to expand on the hypotheses of educational psychology or the didactic objectives which form the basis of this course. One of the remarkable designs typical to this course concerns the bottleneck of how to arrive at content oriented, free, productive – not imitative – language use by means of cognitive, form oriented, structuring. The transfer of the suggested mental mediators constitutes one of the most serious problems. In the handbook for teachers, the authors themselves affirm that this volume is the indispensable tool, as it were, of the entire package: the objectives of each *Step and Unit* are detailed; worthwhile suggestions for learning 'by playing' and particular aspects of pronunciation are presented. Evaluation depends largely on the exercise book of the student, although more adequate testing may be required in this regard, possibly by a more operational formulation of the objectives.

At this time there is an opportunity to experiment with this course, albeit with somewhat older beginning students than those for which the course was initially intended. At a later date, the experiences gleaned from this experimentation will be formulated in more detail. It now seems, however, that the promises inherent in *The Magic Key* will be verified for the most part. One consideration seems sure: *The Magic Key* constitutes a challenge for the teacher. The course appeals to his sense of renewal and reform and fully offers him the opportunity to join in the search in a creative way for the most adequate *modi operandi*, procedures, and techniques within a balanced cognitive-functional-situational approach to the EFL teaching-learning process.

M. S.

— *F. Van Besien*, researcher attached to the Seminar and Laboratory for Experimental, Psychological and Social Education of Gent State University (directors : Prof. Dr. R. Verbist and Prof. Dr. M.-L. van Herreweghe), took his doctoral degree in Germanic Philology with a dissertation on 'The syntax of the initial language production of Dutch speaking children'. Supervisor was Prof. Dr. V. F. Vanacker (Gent State University). An abstract is given below.

The first part presents an overview of studies on the child's native language acquisition from 1960 onwards. Attention is paid to theoretical studies as well as to practical investigations of child language corpora. The period 1960-1970 can be characterized as the structural and transformational generative approach : researchers try to develop generative grammars for the speech of the children they study, but the methods used are those of structural linguistics. A typical example is a pivot grammar. Underlying theories are found, first in behaviorism (operant conditioning) and later in Chomsky's LAD-model (language acquisition device). Bloom (1970) can be considered as a link towards a semantic approach in that she pays attention to contextual characteristics of child language and tries to study the child's semantic intentions. The semantic approach considers language development as a part of cognitive development as a whole and finds its linguistic basis in recent semantic linguistics (case grammar).

The second part is a report of an investigation in the syntactical structure of two- and three word sentences of two Dutch speaking children. Analyses are made according to a number of approaches : pivot grammar, transformational grammar, case grammar, and 'major meanings' (Brown) in order to evaluate these methods. Pivot grammar does not give a valuable description ; a transformational grammar does but is too abstract ; a case grammar seems to be the most interesting method to account for native language acquisition. The analyses were confronted with those in a number of studies on the acquisition of other languages : English, Finnish, Luo, Samoan, French, Hebrew, and Russian. In support of the universality hypothesis, many parallels could be found between the Dutch structures and those of other languages.

— Le Professeur Dr. H. Van daele nous fit parvenir sa publication « Camille Huysmans geschriften en documenten – VI B Camille Huysmans en het onderwijs ».

La publication fournit une riche documentation d'une période de l'histoire de l'éducation belge de plus d'un demi siècle 1908 à 1959 où la personnalité de Camille Huysmans – homme d'état qui s'est surtout attaché au problème de l'enfant et son école – a influencé d'une façon remarquable la planification de l'enseignement et son évolution.

Bibl. : Van daele, Henk : « Camille Huysmans geschriften en documenten – VI B Camille Huysmans en het onderwijs ». Antwerpen, Amsterdam ; Standaard, Ontwikkeling ; 1976, 8°, VIII-341 p.

499. GREECE — GREECE

— The Government has decided to establish a new university, the seventh in the country, on the Island of Crete.

The university will be at Rethymnon, some 75 kms east of Herakleion, with some of its schools operating in Herakleion, and a Polytechnic Institute at Hania. Initially, the University will have a Faculty of Philosophy at Rethymnon and Schools of Medicine, Physics and Mathematics will be at Herakleion.

— Under the direction of Prof. *J. Markantonis*, University of Athens, *J. Marmarinos* is preparing a doctoral dissertation on 'An Experimental Approach to the Teaching of History'.

569.4. ISRAEL — ISRAEL

— After two years of preparation, Israel's Everyman's University has opened; 15,000 requests were received for information and 7,000 asked for the self-testing trial brochures to evaluate their prospects of success. Two-thirds of the 3,500 students who registered for the academic courses were accepted on a 'first come first served' basis. No particular qualifications were demanded. The remainder are on the acceptance list for the second round of the same courses beginning in March.

The five academic courses are, in order of popularity, Jewish studies, mathematics, life sciences, natural sciences and earth sciences. The first two together attracted about half of the students.

Two thirds of the students are men; 55 per cent are aged between 25 and 39, 108 are over 60 years old. Twenty-five per cent are teachers, a figure not regarded as satisfactory as the prime objective of the university was to help upgrade teachers.

Each course has 12 units spread over 16-18 weeks. It is reckoned that students will have to work 10-15 hours a week on each unit. The successful completion of one course will give the student one credit point towards the 18 required for the bachelor's degree. Fees are low compared with those at regular university.

The second aim of Everyman, which is aided by the Rothschild Foundation, is to provide nonacademic adult education courses: 550 students have been accepted for the first four courses, two in electronics, one in electricity, and one in computer science. Additional courses planned to begin in March include Arabic and English.

Correspondence is the chief medium of tuition, but three times a week there are short television broadcasts. Students receive home kits for laboratory work. There are 20 study centres in the country, mostly in schools or colleges. In these the students can receive individual or group instruction or advice from tutors. They can use the centres' libraries and laboratories as well as closed-

circuit television. They can also contact the tutor by telephone in the centres during certain hours.

(*The Times Higher Education Supplement*, no. 265 (Nov. 1976), p. 13.)

620. EGYPT — ÉGYPTÉ

— Un séminaire sur l'éducation des adultes et le développement, en particulier dans les pays arabes, a été organisé au Caire, du 29 novembre au 9 décembre 1975, par le Centre régional d'alphabétisation fonctionnelle en milieu rural pour les États arabes (ASFEC) et la Fondation allemande pour le développement international, en collaboration avec l'Unesco, la Commission nationale égyptienne pour l'Unesco et l'Association allemande pour l'éducation des adultes.

Le séminaire avait pour objet de faire le point de la situation dans les États arabes, d'étudier les institutions nécessaires au bon fonctionnement d'un système général d'éducation des adultes et de préparer un rapport sur le développement de l'éducation des adultes, tout particulièrement dans les pays arabes. Les débats ont notamment porté sur les points suivants : l'éducation des adultes dans la perspective du développement ; le rôle des universités et des centres de documentation ; l'administration et les finances ; l'éducation des adultes et les politiques culturelles.

(*Bulletin de l'Association Internationale des Universités*, Vol. XXIV, no. 3 (1976), p. 193.)

672.4. ZAIRE

— Organisée avec la collaboration de l'Université nationale du Zaïre, particulièrement du Centre interdisciplinaire pour l'éducation permanente du campus de Kinshasa (CIDEP), et de l'Association zaïroise pour l'éducation des adultes, la cinquième Conférence biennale de l'Association africaine pour l'éducation des adultes (AAEA) s'est tenue à Kinshasa du 5 au 8 novembre 1975 (Convergence, Conseil international d'éducation des adultes).

Cette Conférence avait pour thème « La relation entre l'éducation formelle et non-formelle en Afrique ». Elle a réuni des participants du Ghana, du Kenya, du Malawi, du Nigéria, du Soudan, de Tanzanie, de Zambie et du Zaïre, et d'Allemagne fédérale, ainsi que d'organismes tels que l'Unesco, l'USAID, le British Council, et l'Association des universités populaires allemandes. Lors de la Conférence, les communications et les discussions furent axées sur des points généraux et des cas spécifiques de certains pays, comme par exemple l'intégration des systèmes formel et non-formel en Tanzanie, par M. Yusuf Kassam, Professeur d'éducation des adultes à l'Université de Dar es Salaam. Un des délégués du Soudan a insisté sur la formation des maîtres pour adultes au sein de collèges d'éducation, et l'équivalence des certificats délivrés par les deux systèmes. D'autres exposés ont été prononcés sur les moyens de communication de masse (par M. Mukenge Dafumu, Vice-

Président de l'Association) ainsi que sur la justice sociale (Mme Kongolo, Assistance au CIDEP, et M. Kwesi Ampene, Directeur de l'Institut d'éducation des adultes de l'Université du Ghana.)

(*Bulletin de l'Association Internationale des Universités*, Vol. XXIV, no. 3 (1976), p. 188.)

73. U.S.A. — E.U.A.

— *Jere E. Brophy* has been appointed professor of teacher education and educational psychology at Michigan State University, and named to the staff of the Institute for Research on Teaching.

— *Sydney S. Dunn*, formerly Dean of the Faculty of Education at Monash University, has been named chairman of the education research and development committee, Department of Education, Canberra.

— *Richard V. Hatley* has been appointed chairman of the department of educational administration, University of Missouri-Columbia.

— *Kenneth P. Mortimer* has been named director of the Center for the Study of Higher Education at The Pennsylvania State University.

— The Foundation for Child Development has announced the establishment of a doctoral program and the continuation of a postdoctoral program in the area of child development.

The doctoral program, beginning in the fall semester, will be in the Department of Human Development and Family Studies in the New York State College of Human Ecology at Cornell University. Students who have completed at least one year of graduate work are eligible to apply for specialization in the particular ecological context of their choice. This program is under the direction of a committee including *Urie Bronfenbrenner*, Chair; *Moncrieff Crochran*; *John Condry*; *E. C. Devereaux*; *John Hill*; *Barbara Koslowski*; *Henry Ricciuti*; and *John Weisz*. Further information may be obtained from *Lee C. Lee*, Graduate Field Representative, New York State College of Human Ecology, Martha Van Rensselaer Hall, Ithaca, NY 14853.

The post-doctoral program, also focusing on child development within ecological systems, is open to persons not more than ten years beyond the doctoral degree. For details on application procedures, write: *Joyce Brainard*, Administrative Aide, Program on the Ecology of Human Development, Department of Human Development and Family Studies, Cornell University, Ithaca, New York 14853.

(*Educational Researcher*, Vol. 5, No. 9 (Oct. 1976), pp. 20-21.)

— Division 15 (EP) of the American Psychological Association has a Committee on the Teaching of Educational Psychology. One of the projects of this Committee is to do a thorough review and expansion of the 1965

Handbook of Teaching Educational Psychology by *Stuart Jones* and others. It will be the intent of this Committee to make the proposed resource handbook generally available in the service of improving the teaching of educational psychology.

Basically what the Committee is trying to do is to identify and compile resources relating to the teaching of educational psychology and make a resource handbook that would be helpful to prospective and incumbent teachers of educational psychology courses in teacher education programs. It is considering such things as test materials, films, other forms of media, simulations, games, text references and, indeed, any source materials that might be useful to the teaching of educational psychology.

Richard E. Ripple (Cornell University) has been asked by the Committee to identify such resources that exist and are available outside the United States. He would appreciate it if one could send him lists of materials, and/or otherwise instruct him regarding how to identify and/or compile international resources available in the teaching of educational psychology that otherwise might be missed.

Mr. *Ripple* will be pleased to send to our readers a copy of the resource guide for the teaching of educational psychology when it becomes available.

— Dr. *J. P. Cangemi*, Associate Professor of Psychology, Western Kentucky University, Bowling Green, Kentucky, sent us two papers relating to the field of education. The first one is on students' relations towards university, the second is on the drive of power as a factor in learning:

NEGATIVE STUDENT-PROFESSOR, STUDENT-DEPARTMENTAL RELATIONS: THE CATALYST BEHIND CAMPUS REBELLION?

One aspect of student life that interests this writer is negative student-professor, student-departmental relations. Where there is affectual distance between students and faculty members, and their departments in general, there generally will follow some type of problem. *Roszak*, in 'The Making of a Counter Culture', suggested that students are tired of being seen as meaningless and unimportant and merely tolerated. Students of today will take steps to alter this condition. Although *Roszak* presented very few facts to support his views, his perceptions are none the less interesting.

In an effort to obtain empirical substantiation, the writer reviewed extensive data by *Arno* that shed some interesting light on the topic. *Arno* authored a book entitled 'Student Alienation: A Venezuelan Study'. His findings are indeed important to professors and administrators in higher education everywhere and not just Venezuela. *Arno* found there is a strong probability that distant student-professor relations will have a detrimental effect on certain students' self-esteem and aspirations to continue in academic fields. Negative student-professor relations tend to decrease perception and clarity of future occupational roles and status of students with low self-worth, adding to a sense of alienation.

It appears that snobbish, cold, indifferent and arrogant professors cause serious self-doubts in students with existing low self-regard. Departmental failure to show concern and give clarity to the roles of its graduates adds to these students' feelings of alienation. In addition, if these students are enrolled in a field of low prestige, the outcome is likely to be very negative. According to *Arnove*, these experiences generate powerful negative self-appraisal. They add measurably to already existing low self-evaluation. When low self-regard becomes a strong force within the student he begins to perceive less and less as a reality the occupational role and status he had at one time as his goal. This leads to further alienation, which produces bitterness and resentment and which, at some point, could realistically terminate in the premeditated pouring of gasoline on the floor of a building to insure its rapid ignition and burning.

Institutions of higher education need to be highly concerned with alienated students. *Arnove's* study clearly showed that alienated students may pose serious problems for the future. If these students become frustrated, the likelihood is high they could become easy converts to extremist movements bent on toppling university administration. Students with low self-esteem who are experiencing negative relations with both their professors and their departments fail to perceive their future occupational roles and status with clarity. *The must be singled out and aided.* They represent a reservoir of social dynamite festering within the college and university structure ready to ignite under the right condition. *Arnove* suggested that potentially these are the leaders of tomorrow's rebellions on campus.

It now appears possible to hypothesize that *some* professors and *some* departments had a hand, in one way or another, in the burning of buildings at their own institutions, institutions they cared for and to which they professed allegiance, simply because of their negative relations and indifferent, unconcerned attitudes toward students.

The implication for higher education seems clear. Concerned, mature, competent, affect oriented, student oriented faculty members will affect students in ways that will relegate potential student unrest problems to remain essentially lowlevel. Also, academic departments need to help integrate their students successfully into society as well as show interest in them. This is especially important if the field of study is not one of the more prestigious areas.

Students have learned that through massive participation and, if necessary, violence, they can topple presidents, overrun universities, destroy millions of dollars worth of facilities, end classes and, in general, equalize the power they lack. Alienated students will rise to the occasion to defend their lost dignity and identity. From the viewpoint of this writer, this is one very important aspect of student life which professors and other leaders in higher education need to be vitally aware of.

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- Arno, R., 'Student Alienation: A Venezuelan Study' (New York, Praeger Publishers, 1971).
 Roszak, T., 'The making of a Counter Culture' (New York, Double Day and Company, 1969).

THE DRIVE FOR POWER AS A FACTOR IN LEARNING

The purpose of this brief paper is to introduce the concept of the drive for power as an important factor affecting learning. The *drive for power*, to this writer, concerns itself with the drive for domination, control, influence, and mastery. Power is a drive that can be emitted from an external stimulus or can be emitted without the presence of an external stimulus; without any noticable stimulus at all.

A recent researcher named *Schimmel* stated that in human beings, the name of the game is self-esteem. Using self-esteem as a consistent strong internal and external stimulus, we can look at why power and the drive for power could be viewed as a method for explaining considerable learning and behavior that takes place in human beings.

The drive for power can be observed in infants. Crying gives a child power over his environment: his parents, his food, his physiological condition (soiled diapers). His desire for love. Parents generally are directed in their behavior by a child's crying. Hence, the child learns through crying that responses can be evoked from the environment and that the environment can be controlled through crying. This is power, sensed and exercised by the infant. Figure 1 shows the pattern of the quest for power in a child.

Drive for Power in the Infant:

Infant	Is	Others	Reinforcement	Child	Child
Feels.....	Crying.....	Respond.....	Follows.....	Feels.....	is
Bad				Important	POWERFUL
				(Self-Esteem)	

Figure 1

As the infant grows larger and is able to get around in his playpen or crib, he can be observed to learn to play with those toys over which he can exert control. Those toys he cannot manipulate, control, or, in other words, over which he does not have power, will be discarded, broken, or not utilized at all. After the child has mastery over his toys, self-esteem is bolstered. The child feels mastery, power.

Now his search for more power is evident. He moves out of his crib or playpen. He wants power over space, the immediate space around his playpen;

he wants more power over the world around him. Hence, he leaves his small kingdom (playpen, crib) and attempts to conquer a larger one: the kitchen, the living room, the cupboards, the ashtrays, the stove, and anything else he can crawl to and 'invade'.

The urge for power can be utilized to understand learning when we observe it in adults. The possession of a house, good clothes, good car, good furniture, etc., is the exercise of power. These things bring status and status brings power. Learning that status (and power) can be purchased through the attainment of these items will lead the individual to learn ways to attain these things. For example, it will be learned that an expensive house is purchased with a large quantity of money; money must be obtained legally (or one learns that punishment will result when money is not obtained legally). This money, generally, must be earned. So, now, one learns to consider avenues (professions, business) through which to attain his goal, which is also a power symbol.

Other examples of the satisfaction of the drive for power are lecturing and politics. Lecturing is power, power over others. Those that want power over others, particularly large groups, might enter teaching, or politics. This requires education, however, and this is learning because we learn that to get this power we need preparation. Power over 'things' and over others is most reinforcing.

Power can be obtained with hardly any education in some instances in many communities, and a good example is the policeman. Low pay, but lots of power.

People learn to do those things that give them power. Those that succeed are positive reinforcers and will be utilized again. Those behaviors that do not lead to power become extinct eventually. The attainment of power is strong positive reinforcement and is a great prop to self-esteem. Those behaviors that lead to power are reinforced and we learn to repeat them because of their prior success in obtaining power.

Power can even be subtle in its attainment. A youngster failing in school may find failing a great way to gain power over his dominating family. Even with the negative consequences evident, the use of power can be inferred in such cases as this to offset power others have over the student.

A man getting bald may suffer because he feels he is losing power or potential power over others, particularly women.

The drive for power is observed in the following situation:

- the Don Juan wants power over many females;
- the baseball player wants mastery over the attendant skills;
- the writer wants power to influence others;
- the driver wants power over his car when he pushes down on his pedal;
- football players want power over their opponents (score) - and they learn certain plays, tactics, patterns, etc., that will lead them to this power.

The drive for power can be observed daily. To this writer, it is interesting to note we learn to do those things that bring us power or maintain it and we tend to eliminate those things that keep us from it.

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Erikson, H., 'Identity: Youth and Crisis', (New York, W. W. Norton, 1968).

Staats, A. W., 'Human Learning', (New York, Holt, Rinehart and Winston, 1964).

— A new 'Cumulative Index to Institutional Research Reports and Published Articles' is published by Prof. Dr. *Boris Bai, Jr.*, Harcum Junior College, Bryn Mawr, Pennsylvania 19010. Interested readers may write to Prof. *Blai* for a copy.

— The Pennsylvania Educational Research Association (PERA) has available 'Notes on PERA 1976 Conference', prepared by Dr. *Robert Hayes*, Director of Research. Copies can be requested to Dr. *B. Blai, Jr.*, Harcum Junior College, Bryn Mawr, Pa. 19010.

— 'The Gifted Child Quarterly', Vol. XX, No. 30 (fall 1976) presents a special issue on 'Mathematics for the Gifted'. Guest editor is Prof. *Julian Stanley*, chairman of the Johns Hopkins University, Baltimore, Maryland. Professor *Stanley* has been directing the Study of Mathematically Precocious Youth.

— The July/August number of the Journal of Educational Research — is a special issue on 'Minicourse Instruction' and presents the following articles.

— *G. Katz*: 'Use of minicourse instruction with students of educable mentally retarded children';

— *J. W. Moore* and *J. A. Schaut*: 'Stability of teaching behavior, responsiveness to training and teaching effectiveness';

— *R. W. Motta* and *J. R. Vane*: 'An investigation of teacher perceptions of sex-typed behaviors';

— *D. W. Carnine*: 'Simular sound separation and cumulative introduction in learning letter-sound correspondences';

— *C. E. Edeburn* and *R. G. Landry*: 'Teacher self-concept and student self-concept in grades three, four, and five';

— *M. Kourilsky* and *J. Hirsbleifer*: 'Mini-society vs. token economy: an experimental comparison of the effects on learning and autonomy of socially emergent and imposed behavior modification'.

(*Journal of Educational Research*, Vol. 69, No. 10 (1976).)

— Two new bibliographies of ERIC documents are now available. 'Multicultural Education and Ethnic Studies in the United States', by *Donna M. Gollnick*, *Frank H. Klassen* and *Joost Yff*, contains three chapters: Multicultural Education, Bibliography, and Analysis of Bibliography, and is available for \$ 4.00 from the American Association of Colleges for Teacher Education.

Suite 610, One Dupont Circle NW, Washington, DC 20036. 'Instructional Television: The Best of ERIC 1974-1975', an update of previous editions by Warren F. Seibert, includes sections on Children and Television, Influencing Skills and Attitudes, Policy and Funding, Programing Research and Evaluation, Satellite and Cable Systems, Television Effects, Television for Adult Audiences, Television for Bilingual Education, and Television in a Foreign Setting, and can be ordered from Box E, School of Education, Stanford University, Stanford, CA 94305 for \$ 2.25.

— 'Sex Differences and Reading: An Annotated Bibliography' has been published by the International Reading Association. The bibliography, compiled by E. Marcia Sheridan of Indiana University, includes sections on sex differences in reading, sex differences based on reading methods, materials and sex differences, sex of teacher, separate sex classes, differences in treatment of boys and girls, sex differences in interest and attitude, sex differences in achievement, cognitive and psychological sex differences, and development of sex role.

— For the first time for some years America has good news about standards of reading in its schools. A nationwide government survey has found that reading ability has not deteriorated in the past few years, and the skills of nine-year-olds have improved considerably.

A report by the National Assessment of Educational Progress (NAEP) found that black nine-year-olds have shown a 'dramatic' improvement over the past four years, although they were still 13 per cent behind white children. The reading performance of 13 and 17-year-olds has not changed much, although more 17-year-olds are now better at reading everyday items such as telephone bills and instructions on tinned food.

The results are based on comparisons between two identical tests administered across the country in 1971 and 1975 to 63,000 pupils.

In the broadly encouraging picture, however, there are some disturbing details. Among older pupils it was found that when items became more difficult, either as a result of lengthy passages or because passages needed manipulation of information, the 17-year-olds scored less well than four years ago. Both they and the 13-year-olds also showed a decline in the ability to draw inferences from what they read.

To many the findings may seem puzzling, coming as they do hard on the heels of the much-publicized drop, for the thirteenth year running, of verbal ability scores in the Scholastic Achievement Tests. These tests, taken by a million school leavers hoping to go to college, are widely regarded as an indication of general educational standards in American schools.

NAEP said, however, that the two sets of results were not contradictory, as they were measuring different things for different purposes.

(*The Times Educational Supplement*, no. 3204 (Oct. 1976), p. 15.)

— A new 'Journal of Career Education' has been announced by the College of Education, University of Missouri-Columbia. According to the publisher, the quarterly will 'provide a professional forum for individuals and agencies interested in the development and progress of career education.' Subscription rates are \$ 8 per volume, or \$ 3 for single copies. Manuscripts with empirical methodological and theoretical content on career education are solicited and should be directed to the editor: H. C. Kanzas, University of Missouri-Columbia, Columbia, MO 65201.

— *Research Relating to Children, Bulletin 35*, containing abstracts of research in progress, as well as a bibliography, *Children's Self-Concept*, is available for \$ 3.10 from the Government Printing Office, Washington, DC 20540. Order stock number 017-080-01481-5.

— The Center for the Study of Evaluation, UCLA, has published 'a critical and objective evaluation of all published assessment, diagnostic, and prognostic instruments for elementary school children.' Titled 'CSE Elementary School Test Evaluation', the 660 page volume evaluates tests for such characteristics as meaningfulness, examinee appropriateness, administrative usability and quality of standardization. It is available from STE Publications, CSE, UCLA Graduate School of Education, Los Angeles, CA 90024.

— An interim evaluation is available of the first two years of a basic skills instruction program for grades two through six in the Dade County, Florida, schools. The Reading and Math Systems programs have involved 26,000, 50,000 and 70,000 students respectively during the first three years. The report provides an overview of the county's Systems programs, a summary of the degree of implementation of those programs as of February 1974, and a comparative analysis of the adjusted average achievement gains made by the various groups of program participants, as well as a cost analysis of the various programs. For details of the programs or copies of this or later reports, write: Department of Planning and Evaluation, Dade County Public Schools, 1410 Northeast Second Avenue, Miami, FL 33132.

(*Educational Researcher*, Vol. 5, No. 9 (Oct. 1976), p. 18.)

914. PHILIPPINES

— Des méthodes innovatrices d'enseignement de la lecture ont fourni le thème d'un séminaire organisé l'automne dernier par l'Association pour la lecture aux Philippines, auquel ont participé environ 200 éducateurs. Couvrant les niveaux primaire, secondaire et tertiaire, le séminaire a présenté des démonstrations d'une méthode quadridirectionnelle pour l'enseignement des débuts de la lecture, de l'utilisation des jeux de lecture aux niveaux élémentaires et de la technologie dans une classe de lecture, enfin de l'enseignement des arts de la communication dans les écoles secondaires. Des détails sur ce séminaire,

de même que sur une manifestation analogue qui a eu lieu au printemps dernier et traitant de la production des matériels modulaires, peuvent être obtenus auprès de Mme *Natividad A. Santos*, RAP President, P.O. Box 84, Araneta Center, Quezon City, Philippines.

941. AUSTRALIA — AUSTRALIE

— A National Forum for University Adult Educationists working in universities and colleges of advanced education has been established in Australia.

The Forum, which was initiated at a seminar conducted by the University of Adelaide, is not an alternative association to the Australian Association of Adult Education (AAAE), but rather a means of promoting communication and co-operation within one of AAAE's component parts.

— The following doctoral dissertations are being prepared at Monash University, Clayton, Victoria :

- *B. M. Bullivant* : 'Competing values and traditions in an orthodox Jewish day school : a study of enculturation dissonance' ;
- *J. T. McArthur* : 'Teacher socialisation : the influence of initial teaching experience on the pupil control ideology of beginning secondary teachers' ;
- *L. H. T. West* : 'The organising role of prior knowledge and advance organisers in classical learning'.

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